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HELICOPTER GLACIER TOURS DRAFT ENVIRONMENTAL IMPACT STATEMENT

Alaska Region
Tongass National Forest
Chatham Area
Juneau Ranger District



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SUMMARY

This Draft Environmental Impact Statement (DEIS) is written in response to applications received from three helicopter companies who want to provide helicopter landing tours on, and immediately adjacent to the Juneau Icefield, Juneau, Alaska. The Forest Service will use the Final EIS to support a decision on whether or not to issue special use permits for helicopter landing tours, the use levels to be authorized, and mitigation measures to be added to the permit.

PURPOSE AND NEED

Permits for helicopter landing tours, which were first issued in 1984, for all three companies expire at the end of 1994. The applications for five year permits are for increased use over the 1994 level. The purpose and need for the proposal is to meet public demand for quality guided services which provide safe helicopter access to remote locations on the Juneau Icefield. The proposed action is to authorize helicopter landings on the Juneau Icefield as requested on applications submitted by Temsco, Coastal, and ERA. Permits would be issued to each of the helicopter companies for five years which would authorize a peak total of 22,290 landings in 1999.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

Six alternatives, including the Proposed Action and No Action alternatives were considered.

Alternative A – No Action

Alternative A would not authorize landings on the Icefield. Flightseeing tours with no landings could continue but would be outside the jurisdiction of the Forest Service.

Alternative B – Proposed Action

Alternative B would issue five year permits as requested by the operators. By 1999, Temsco would be authorized 13,090 landings; Coastal would be authorized 382 landings; and ERA would be authorized 8,818 landings.

Alternative C – Authorize Current Level of Landings Through 1999

Alternative C would limit the helicopter tour landings to the same level as was approved for 1994. By 1999, Temsco would be authorized 6,861 landings; Coastal would be authorized 64 landings; and ERA would be authorized 8,818 landings.

Alternative D – Authorize Mid Level Number of Landings Through 1999

Alternative D would authorize additional helicopter landings through 1997, after which authorized landings would remain at the 1997 level. By 1999, Temsco would be authorized 11,180 landings; Coastal would be authorized 237 landings; and ERA would be authorized 7,091 landings. In addition, the helicopter landing tours would not be allowed on one weekend day each week.

Alternative E – Satellite Heliport

Alternative E would be similar to Alternative B – Proposed Action except that a new satellite heliport would be located between miles 25 and 28 on the Glacier Highway.

Alternative F – 1994 Level with Limited Hours and Days

Alternative F would be similar to Alternative C (Authorize current level of landing through 1999) with the additional restriction of limiting landing of all tours at the Icefield to the hours of 8:00 am through 6:00 pm. Also landing tours would not be allowed one weekend day each week nor on holidays.

AFFECTED ENVIRONMENT

The Federal Aviation Administration has control over aircraft in the Airport Influence Zone, which is a three nautical mile radius around the airport. The City and Borough of Juneau is the agency responsible for managing noise within the Airport Influence Zone. In 1993, measurement of helicopter sound and the ambient background sound were made by the Forest Service at twelve locations throughout Juneau to aid in the assessment of the sound impact of helicopter tours. This study compares the equivalent sound level (Leq) of the background or ambient sound to the level including the contribution of the sound from the helicopter landing tour operations.

The Mendenhall Glacier Recreation Area (MGRA) is an area designated by the Forest

Service for the purpose of public recreation use. This area is located in the northern portion of the Mendenhall Valley and includes the Mendenhall Glacier Visitor Center, Mendenhall Glacier Campground and Skater's Cabin Day Use Site, and Dredge Lakes Area.

The following trails, both inside and outside the MGRA, are within the area of helicopter tours: West Glacier Trail, Trail of the Glacier, East Glacier Trail, Steep Creek Trail, Moraine Ecology Trail, Dredge Lakes Area trails, Nugget Creek Trail, Heintzleman Ridge Trail, Montana Creek Trail, Auk Nu Trail, and Spaulding Meadows Trail

The area of analysis for wildlife resources includes the Juneau Icefield and the helicopter flight paths used to reach the Icefield. Wildlife concerns focus briefly on mountain goats, but other species found in this area include black and brown bears, wolverine, wolves, trumpeter swans, beaver, songbirds, waterfowl, woodpeckers, river otters, raptors, owls, bald eagles, and moose.

ENVIRONMENTAL CONSEQUENCES

Effects to the Juneau Icefield would be minor from the helicopter landing tours. Landing on snow and ice does not create adverse impacts.

Issue 1 – Noise to Residential Areas

The Forest Service Sound Study (Forest Service, 1994a) concluded that the sound levels from the helicopters do not pose a threat to

hearing safety for either humans or animals. Therefore, the only acoustic impact resulting from the helicopter sounds is that of annoyance to people who reside in areas close to the helicopter flight paths. The overall impact, as gauged by an increase on the annoyance-percentage graph is low for most of the measurement sites. Even the sites with a larger difference between the background and combined levels still had overall sound levels that rated relatively low on the annoyance percentage relationship graph.

Depending upon the continued demand for helicopter tours, both landing and flightseeing tours, there may be little difference in the effects generated by any alternative. The effects of helicopter overflights to, and from, the icefield landing sites are the same regardless of whether the helicopters land or remain airborne but the number of overflights increases the duration of disturbance. For alternatives which constrain or limit the number of icefield landings, helicopter companies, in order to meet demand, have the option of continuing to market helicopter rides as flightseeing tours using the same flight paths as landing tours. Assuming that the demand is being met, the same number of helicopters could be creating the same effect on residents, recreationists and wildlife under all alternatives, including the No Action Alternative.

Issue 2 – Disturbance to Ground-Based Recreation Users

The effect of helicopters traveling in areas in the vicinity of ground based recreation activities is the interruption of solitude caused

by the noise of the aircraft. The level of annoyance would be higher in areas of more solitude and lower in high use areas such as the Mendenhall Glacier Visitor Center.

All alternatives, except Alternative E - Satellite Heliport, would affect West Glacier Trail, Trail of the Glacier, East Glacier Trail, Steep Creek Trail, Moraine Ecology Trail, Dredge Lakes Area trails, Nugget Creek Trail, Heintzleman Ridge Trail, Montana Creek Trail, Auk Nu Trail, Spauldings Meadows Trail. Mendenhall Glacier Visitor Center, Skater's Cabin, and Steep Creek Area. The effects would be the same but the duration of effects would vary by alternative, with the alternatives with more landings having more duration.

Alternative E - Satellite, would have flights from a satellite heliport out Glacier Highway between miles 25 and 28. The trails and recreation sites affected helicopter flight paths from a heliport in this area would be Peterson Lake Trail, Herbert Glacier Trail, Amalga Trail, Eagle Beach, Windfall Trail, and Eagle Glacier Cabin.

Issue 3 – Wildlife

The effect of helicopters traveling in areas in the vicinity of wildlife is the disturbance to them caused by the noise of the aircraft. Wildlife concerns determined by Forest Service biologists focus primarily on mountain goats. However other species are also of concern. Increases in areas where past helicopter use has been low or non existent, such as Gilkey Glacier, Eagle Glacier, Death Valley, Herbert Glacier, and Taku Glacier, would likely result in highest impact to mountain goats and other wildlife. In areas where helicopter use has

been high, such as Mendenhall Glacier, mountain goats have become habituated to the helicopters and would likely not be effected by helicopter travel.

The effects of flights from all alternatives, except Alternative E - Satellite Heliport, would be the same but the duration of effects would vary by alternative, with the alternatives with more landings having more duration.

Alternative E – Satellite Heliport would cause new helicopter travel in an area which currently experiences low use. This would impact brown

bear, wolves, songbirds, river otter, marten, raptors, and wolverine in the Eagle and Herbert River corridor because of the increase in helicopter noise in this area. Mountain goats in the alpine areas would also receive an increase in helicopter noise and could be negatively effected by this new use.

[End of Summary]

CHAPTER 1 – PURPOSE OF AND NEED FOR ACTION

A. INTRODUCTION

The Juneau Ranger District has received applications from three helicopter companies who wish to provide helicopter landing tours on, and immediately adjacent to, the Juneau Icefield, Juneau, Alaska. Temsco Helicopters Inc. (Temsco), Coastal Helicopters Inc. (Coastal) and ERA Helicopters Inc. (ERA), are requesting to renew the special use permits under which they are currently operating, with an increase in helicopter landings. All three of these permits expire December 31, 1994.

The proposed helicopter landing tours consist of a thirty to ninety minute trip in a helicopter from a heliport near sea level to a glacier in the Juneau Icefield, a landing on a glacier and a walk on the glacier in the vicinity of the helicopter with a guide who describes glacial phenomenon. Tour companies who transport large number of passengers, minimize helicopter costs by dropping off new passengers on the Icefield and immediately loading earlier passengers for the return trip to the heliport. Most tours are offered between April and September.

Besides the Forest Service, helicopter tours fall under several other agencies' jurisdiction. These agencies include the Federal Aviation Administration, the City and Borough of Juneau, the Alaska Department of Fish and Game, and the U.S. Fish and Wildlife Service. These jurisdictions are described under the heading "Other Laws and Permits."

The three glacier tour helicopter companies operating in Juneau have the following helibases: Temsco helibase is located at the northwest end of the Juneau Airport runway. Coastal helibase is near the center of the runway on the east side. ERA helibase is on the west side of Gastineau Channel at approximately mile 3 on North Douglas Highway.

Background: 1984

In 1984, the Juneau Ranger District authorized Temsco to conduct landing tours on the Mendenhall Glacier. This glacier is part of the Juneau Icefield and is immediately adjacent to the valley community of Juneau. Since that time Temsco has developed their tour into a highly successful business marketed principally through tour ships visiting Juneau.

Background: 1987

In 1987, the Juneau Ranger District received four applications for new helicopter landing tour operations from: M&M Enterprises, LAB Airlines, ERA/Livingston Helicopters, and Temsco Helicopters. An Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Management Guidelines for Helicopter Landing Tours on the Juneau Icefield was completed and a decision signed on March 9, 1987 (USDA Forest Service, 1987). As a result of the decision, a prospectus for bids for new helicopter landing tours was offered in March of 1987. Temsco and ERA were issued permits as a result of submitting

proposals on the bid offerings and receiving the awarded use.

In the 1987 EA, the study area was divided into ten management zones based on landforms and human use patterns. These zones will be used for this analysis with modification of the Twin Glacier Zone to include Wright Glacier. This area is described in Map 1¹, Icefield Zones.

Background: 1989

In March 1989, Temsco requested an increase in the number of landings allowed on the Mendenhall Glacier from 3,636 landings to 5,455 landings. This request was approved by the Juneau District Ranger in March 1989 (USDA Forest Service, 1989). This decision was based on the success of Temsco in reducing noise levels by phasing in quieter A-Star helicopters, increasing the number of passengers carried per helicopter, changing flight routes, and increasing altitudes flown.

Background: 1992

A letter of agreement, signed on March 23, 1992, (FAA, 1992) established procedures for helicopter operations in the Juneau Traffic Area of the Juneau Airport. This agreement included the Juneau Airport Traffic Control Tower (ATCT), Coastal Helicopters, Silver Bay Logging, Temsco and U.S. Army National Guard. All helicopter operations by the parties to this letter are required to comply with the procedures agreed to unless specific approval to deviate has been given by Juneau ATCT. This analysis assumes this agreement will remain in place. The procedures that apply to the helicopter landing tours are:

1. Altitudes. Recommended altitudes south of the airport are at or below 500' above ground level (AGL) (for separation from fixed wing aircraft), and north of the airport are at or above 1,500' AGL (for noise abatement). Although these altitudes are not mandatory, any helicopter not in accordance with them shall advise Juneau ATCT of its altitude.

2. Montana Creek/Mendenhall Departure. Helicopters shall fly westbound over or south of the Egan Expressway. Fly to the Mendenhall River, then north toward Montana Creek or Mendenhall Lake. In the event of inbound traffic to the runway on an arrival route from the north, ATCT may issue an altitude restriction of at or below 700' mean sea level (MSL) until abeam (at right angles to) the approach end of runway 8. Southbound traffic will be at or above 1000' MSL.

3. Lemon Creek Departure. Helicopters shall fly westbound no farther than the Ward Air hanger then north bound over Heintzleman Ridge.

On July 17, 1992, following preparation of another environmental assessment and FONSI, the Juneau District Ranger signed a decision authorizing five year permits to Temsco and Coastal (USDA Forest Service, 1992a). This decision authorized approximately 6,100 landings per year on Mendenhall Glacier. Helicopter landings on other areas of the Juneau Icefield were the same as approved in the 1987 environmental assessment. The decision was appealed.

Background: 1993

The Regional Forester, Alaska Region, following a review of the appeal, concluded that the Appeal Record was incomplete and that it did not adequately support the District Ranger's decision and he reversed the District Ranger's decision (USDA Forest Service, 1993).

¹All maps referred to are located at the end of this document.

In 1993 Temsco and Coastal both applied for the remaining unassigned 55 landings on the Herbert Glacier under the 1987 EA. By following a prospectus and bid process, the Forest Service assigned Temsco the remaining 55 landings for a total of 491 landings on the Herbert Glacier based on their average landings in 1990 and 1991. This was consistent with the Forest Service Special Uses Handbook 2709 direction for assigning priority and temporary use (USDA Forest Service, 1992c).

Between June 17, 1993 and June 23, 1993, measurements of helicopter sound and the ambient background sound were made at twelve locations throughout the Juneau area by the Forest Service to help in the assessment of the sound impact of helicopter landing tours (USDA Forest Service, 1994a). These measurements were recorded on tape and analyzed in the laboratory to allow comparisons of the overall environmental sound levels with and without the helicopter sound present. The main focus of these measurements was on the helicopter sound impact to local residents. The method used in this study compares the equivalent sound level (Leq) of the background or ambient sound to the level including the contribution of the sound from the helicopter landing tour operations. This allows the helicopter landing tour activities' contribution to the total sound level for that time period to be quantified for comparison purposes.

Background: 1994

For the summer of 1994, permits were issued for all three helicopter companies under the 1987 EA. These permits expire December 31, 1994. All three companies have applied for new five year permits with increased use. These applications, and the existing permits, involve landing sites on most glaciers of the Juneau Icefield. For 1994, Temsco had 7,407 permitted landings; Coastal had 64; and ERA had 3,805 for a total of 11,276 permitted landings on the

Juneau Icefield. See Tables 2-1, 2-2, 2-3, and 2-4.

B. PURPOSE AND NEED

The purpose and need for the proposed action is to meet current public demand for quality guided services which provide safe helicopter access to remote locations on the Juneau Icefield. Meeting this demand includes providing for visitor safety and an appropriate balance between commercial guided recreation opportunities and non-commercial, non-guided recreation opportunities while minimizing impacts to people and resources.

C. PROPOSED ACTION

The Forest Service proposes to authorize helicopter landings on the Juneau Icefield as requested on applications submitted by Temsco, Coastal and ERA. These three applications are for a total of 22,290 (Table 2-4) landings and comprise the proposed action for this Environmental Impact Statement.

Temsco. Temsco has applied for a five year permit for helicopter landing tours on Mendenhall, Herbert, Taku, Norris, Lemon, Twin, and Gilkey Glaciers as well as various locations in the Backcountry Zone, shown on Map 2: Temsco's Routes and Landing Site Proposal. Temsco has been permitted to land on these sites in previous years. Temsco also has a designated reserved site on Mendenhall Glacier where they are permitted to place a small shelter and a porta-potty. For 1999, Temsco is proposing a maximum of 13,090 landings (Table 2-1).

Temsco offers two separate tours. The Glacier Explorer Tour includes two landings and, weather permitting, flies from Temsco's heliport west to the ferry terminal then north to the Icefield. After landing on two different glaciers,

the helicopters return to their heliport via the same route or either through the Lemon Creek area or Taku Inlet then up Gastineau Channel. This tour consists of one or two helicopters flying together with approximately one and one-half hours between tours for up to eight tours per day. Map 2. Temsco's Routes and Landing Site Proposal, shows the flight paths of the Glacier Explorer Tour.

Temsco also offers the Mendenhall Glacier Tour which flies from their heliport to the Mendenhall Glacier. This tour generally consists of five helicopters in a group flying every 25 minutes. Their preferred route, weather permitting, is up Heintzleman Ridge and back. However, with low cloud ceilings, the route is either up the west side of the Mendenhall Valley over Back Loop Road or over Auke Lake and up the eastern edge of Auke Mountain to Mendenhall Glacier. Of these two latter routes, the route up the eastern edge of Auke Mountain is Temsco's preferred route because it is less impacting to the residents of Mendenhall Valley. If weather permits this route is flown first, with the Mendenhall Valley route the last choice. Map 2 shows all three routes.

Coastal. Coastal has applied for a five year permit for helicopter landing tours on Gilkey, Eagle, Herbert, and Taku Glaciers as well as various locations in the Backcountry Zone, shown on Map 3: Coastal's Routes and Landing Sites Proposal. Coastal has been permitted to land on Gilkey and Taku Glaciers in previous years. For 1999, Coastal is proposing 382 landings (Table 2-2). Coastal usually has a single helicopter conducting tours, but occasionally they will fly a group of two helicopters. See Map 3.

ERA. ERA helicopters has applied for a five year permit for helicopter landing tours on Gilkey, Lemon, Norris, Taku, and Twin Glaciers as well as portions of the Backcountry Zone and the Death Valley Zone (ERA, 1993).

ERA has been permitted to land on Norris, Taku and Lemon Glaciers in previous years. For 1999, ERA is proposing 8,818 landings (Map 4; Table 2-3).

ERA's tours leave their heliport on the south side of Gastineau Channel, fly up Salmon Creek to Norris Glacier and back down Sheep Creek returning to their heliport. ERA leaves every 30 minutes with two four-helicopter tours. Map 4, ERA's Routes and Landing Sites Proposal, shows ERA's flight paths.

D. DECISION TO BE MADE

The District Ranger, Juneau Ranger District, is the official responsible for authorizing the special use permits that have been requested. The decision to be made is whether or not to issue special use permits for helicopter landing tours as requested or at different levels. The District Ranger will also determine any mitigation measures that will be required.

E. SCOPING

In addition to the public involvement described below, public involvement from the 1987 and 1992 Environmental Assessments and the 1992 Appeal were reviewed.

In 1991 and 1992, during preparation of the Environmental Assessment the Forest Service requested input on helicopter glacier tours proposed actions by:

1. Mailing letters to 24 individuals.
2. Placing a paid advertisement in the *Juneau Empire* for six days from December 13, 1991 through January 17, 1993.

A total of 17 letters, 21 telephone calls, and 3 visits were received in response to this request for input.

In 1994, the Forest Service requested input on the proposed action by:

1. Mailing letters to 31 individuals, organizations, and agencies.
2. Placing a paid advertisement in the *Juneau Empire* for three days: May 20, 25 and 29, 1994.
3. Requesting input from Forest Service staff and specialists.

A total of 35 letters, 17 telephone calls, and 1 visit were received in response to the request for input.

F. SIGNIFICANT ISSUES

The following issues were identified during scoping:

Issue 1. The noise that helicopters make during these flights could impact the quality of life for residents in the Mendenhall Valley, Fred Meyer, Auke Lake, Juneau Airport and Lemon Creek Areas. Components of this issue are: too many trips, flights occur too frequently, altitude of flights is too low, too many helicopters fly together in one group, flight paths are not acceptable, helicopters start flying too early and end too late in the day and there is no day of the week in which the helicopter landing tours do not fly.

Issue 2. These flights could cause noise disturbance to ground-based recreation users of the Mendenhall Glacier Recreation Area, Montana Creek Trail, Heintzleman Ridge Trail, Spaulding Meadows Trail, Auk Nu Trail, the Mendenhall Glacier Visitor Center,

the Mendenhall Glacier Campground and Skaters Cabin - both on and off Forest Service managed land. Responses to scoping indicate that some recreationists feel that while they are recreating, hearing helicopters is a negative impact to their recreation experience.

Issue 3. Helicopter tours could impact wildlife. Concerns were expressed that helicopter tours could stress certain wildlife species, especially mountain goats but also bears, and bald eagles located primarily in the vicinity of Heintzleman Ridge, Mount McGinnis, Bullard Mountain, Auke Mountain, and Thunder Mountain) and cause deterioration of their health. The noise and sighting of these tours by wildlife is the concern.

G. EXISTING MANAGEMENT DIRECTION

The Tongass Land Management Plan (TLMP), as amended (USDA Forest Service, 1986, 1991), provides the land management direction for the Tongass National Forest. TLMP assigns to the Juneau Icefield two land use designations (LUDs). The majority of the backcountry icefield falls into LUD II - lands that are to be managed in a roadless state to retain their wildland character. This designation permits primitive recreational facility development but excludes roads, and major concentrated recreational facilities. A large portion of the icefield was added to the Tongass National Forest by ANILCA in December 1980 and is unclassified and without management direction. That parcel is surrounded to the south and west by LUD II lands and to the north and east by the international boundary. The major activity emphasis for this area is toward continuance of cooperative efforts with research groups studying the Juneau Icefields and Glaciers. Need for public access is also emphasized.

The remainder of the study area is assigned LUD III. These lands are to be managed for a variety of uses with emphasis on managing for uses and activities in a compatible and complementary manner to provide the greatest combination of benefits. These lands may include concentrated recreational developments. The management area that includes the face of Mendenhall Glacier, Mendenhall Glacier Recreation Area, Auke Mountain, and north to the Eagle and Herbert Glacier drainages is to be managed with a LUD III emphasis. The major activity emphasis is toward recreational and aesthetic development, enhancement and maintenance.

The *Alaska Regional Guide* (USDA Forest Service, 1983) is a document which provides national and regional direction to the Tongass National Forest and the Chugach National Forest for land and resource planning and management. According to the *Alaska Regional Guide*, the Forest Service will provide a broad spectrum of recreation opportunities in accordance with identified needs and demands.

The intent of this policy, as provided in the *Alaska Regional Guide*, is to encourage development of all types of potential services within the private sector to meet a variety of public demands. In some cases, various services may not be mutually compatible.

Specific Forest Service policies and land management direction which apply to this analysis are:

1. Provide a broad spectrum of recreation opportunities in accordance with identified needs and demands. *Alaska Regional Guide*, November 1983 (USDA Forest Service, 1983), and *Tongass Land Management Plan*, as amended (USDA Forest Service, 1986, 1991).
2. Give priority consideration to recreation opportunities now being actively utilized by the public for recreation pursuits. *Alaska Regional Guide*, (USDA Forest Service 1983).
3. Encourage dispersed recreational use. *Tongass Land Management Plan*, Direction for recreation use in the Juneau Icefield area (USDA Forest Service 1986, 1991).
4. Encourage private land and capital to develop services and accommodations to meet public demands. *Alaska Regional Guide* (USDA Forest Service 1983).
5. *Forest Service Manual 2721.03* states: "Issue and administer special use permits for recreation uses that serve the public, promote public health and safety, and protect the environment" (USDA Forest Service, 1992d).
6. *Forest Service Handbook 2709* states: "Encourage skilled and experienced individuals, organizations, and companies to conduct outfitting and guiding activities in a manner that assures national forest visitors receive services of high quality" (USDA Forest Service, 1992c).

H. OTHER LAWS AND PERMITS

Federal Aviation Administration

The Federal Aviation Administration is the agency responsible for all aircraft travel within the influence zone of the Juneau Airport.

The Code of Federal Regulations for the Federal Aviation Administration and Department of Transportation Volume 14, Chapter 1, Part 135.203 states:

"Except when necessary for takeoff and landing, no person may operate under visual flight rules (VFR) a helicopter over a congested area at an altitude less than 300 feet above the surface."

The Juneau Air Traffic Control Tower, under the jurisdiction of the FAA, has authority over aircraft movements in the airspace it is responsible for (a three-nautical-mile radius of the airport up to 2500 feet Above Ground Level (FAA, 1994)).

City and Borough of Juneau

The City and Borough of Juneau (CBJ) is the proprietor of the Juneau International Airport and the agency responsible for regulating noise in residential areas. Airports are responsible for controlling aircraft noise and mitigating its effects in the immediate vicinity of airports (Alaska State Legislature, 1993).

CBJ does not have an aircraft noise regulation in place, however, there is a CBJ ordinance (42.20.095) of Disturbing the Peace defined as doing any of the following actions:

"Between the hours of eleven p.m. and seven a.m. operate or use a pile driver, pneumatic hammer, bulldozer, road grader, loader, power shovel, derrick, backhoe, power saw, manual hammer,

motorcycle, appliance, or vehicle which generates an unreasonably loud noise, after having been informed by another that such operation or use is disturbing or is likely to disturb the peace or privacy of others."

CBJ has not enforced this stipulation for helicopters. The hours described above are generally outside the hours in which helicopter glacier landing tours occur.

U.S. Fish & Wildlife Service

The U.S. Fish and Wildlife Service administers the Endangered Species Act, as re-authorized in 1982, and the Bald Eagle Protection Act of 1940, as amended. The Forest Service must consult with the U.S. Fish and Wildlife Service regarding any threatened or endangered species that might be impacted by the proposed action or alternatives. If any impacts are projected, measures to protect the species must be developed.

Alaska Department of Fish & Game

Alaska Department of Fish and Game provides comments and recommendations to federal agencies via the Fish and Wildlife Coordination Act (16 USDF 66, *et seq.*).

[End of Chapter]

CHAPTER 2 – ALTERNATIVES

A. INTRODUCTION

The National Environmental Policy Act (NEPA) requires consideration of alternatives to the proposed action which address important issues identified in the scoping process. This chapter describes and compares the proposed action and five project alternatives, including the no action alternative. The discussion of alternatives is the foundation of the EIS process (40 CFR 1502.14). There must be a reasonable array of alternatives that achieve the purpose for which an EIS is prepared.

B. ALTERNATIVE A – No Action

Under the No Action Alternative, special use permits to land helicopters on the Juneau Icefield would not be issued to Temsco Helicopters, Inc., Coastal Helicopters, Inc., or ERA Helicopters. Flightseeing tours are outside

the jurisdiction of the Forest Service and may still occur even if no landings are authorized.

C. ALTERNATIVE B – PROPOSED ACTION

With this alternative, special use permits would be approved through 1999 as requested by all three helicopter tour companies, with 22,290 landings approved by 1999 (Table 2-4). Landings would occur between the hours of 8:30 am and 8:00 pm seven days a week from early May through late September. The associated flight paths and elevations flown are outside the jurisdiction of the Forest Service. These flight paths, shown on Maps 2-4 are based on the March 23, 1992, Letter of Agreement between helicopter operators and the Federal Aviation Administration (FAA, 1992) and are assumed to apply through 1999. The number of landings would be approved as shown on Tables 2-1, 2-2, and 2-3.

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ALTERNATIVE B						
TABLE 2-1 – MAXIMUM NUMBER OF LANDINGS BY GLACIER				COMPANY: TEMSCO HELICOPTERS, INC.		
NAME OF GLACIER	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Gilkey Glacier and Backcountry	510	1,090	1,272	1,454	1,636	1,818
Herbert Glacier	546	727	909	1,090	1,272	1,455
Mendenhall Glacier	5,455	6,181	6,545	6,909	7,273	7,273
Lemon Glacier	455	182	272	364	455	545
Norris Glacier	182	272	364	364	455	545
Taku Glacier, Hole-in-the Wall	259	545	636	727	818	909
Twin Glacier	0	91	182	272	364	545
Total	<u>7,407</u>	<u>9,088</u>	<u>10,180</u>	<u>11,180</u>	<u>12,273</u>	<u>13,090</u>

ALTERNATIVE B						
TABLE 2-2 – MAXIMUM NUMBER OF LANDINGS BY GLACIER				COMPANY: COASTAL HELICOPTERS, INC.		
NAME OF GLACIER	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Gilkey Glacier and Backcountry	36	36	55	55	55	91
Eagle Glacier	0	55	73	73	73	109
Herbert Glacier	0	55	73	73	73	109
Taku Glacier, Hole-in-the Wall	28	27	36	36	36	73
Total	<u>64</u>	<u>173</u>	<u>237</u>	<u>237</u>	<u>237</u>	<u>382</u>

ALTERNATIVE B						
TABLE 2-3 – MAXIMUM NUMBER OF LANDINGS BY GLACIER				COMPANY: ERA HELICOPTERS		
NAME OF COMPANY	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Gilkey Glacier and Backcountry	0	182	237	273	318	364
Lemon Glacier	91	182	273	364	454	545
Death Valley	0	182	227	273	318	364
Norris Glacier	3,455	5,136	5,614	6,091	6,568	7,045
Taku Glacier, Hole-in-the Wall	259	45	68	91	113	136
Twin Glacier	0	182	227	272	318	364
Total	<u>3,805</u>	<u>5,909</u>	<u>6,646</u>	<u>7,364</u>	<u>8,089</u>	<u>8,818</u>

ALTERNATIVE B						
TABLE 2-4 – TOTAL NUMBER OF LANDINGS BY COMPANY						
NAME OF COMPANY	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Total: Temsco	7,407	9,088	10,180	11,180	12,273	13,090
Total: ERA	3,805	5,909	6,646	7,364	8,089	8,818
Total: Coastal	64	173	237	237	237	382
Total All Companies	<u>11,276</u>	<u>15,170</u>	<u>17,063</u>	<u>18,781</u>	<u>20,599</u>	<u>22,290</u>

D. ALTERNATIVE C – AUTHORIZE CURRENT LEVEL OF LANDINGS THROUGH 1999

This alternative would limit helicopter tour landings to the same level, 11,276 (Table 2-4), as was approved for 1994. This level includes 9,458 landings approved through the 1987 Decision Notice and FONSI for Management

Guidelines for Helicopter Landing Tours on the Juneau Icefield (USDA Forest Service, 1989) plus approximately 1,818 landings authorized on the Mendenhall Glacier by the Juneau District Ranger in March 1989. Landings would occur between the hours of 8:30 am and 8:00 pm seven days a week from early May through late September. The number of landings would be approved as shown below.

This alternative is intended to address the issues of noise over residential areas, noise and visual disturbance to ground based recreation users,

and impacts to wildlife by not authorizing increased use levels at the landing sites.

ALTERNATIVE C						
TABLE 2-5 - MAXIMUM NUMBER OF LANDINGS BY GLACIER				COMPANY: TEMSCO HELICOPTERS, INC.		
NAME OF GLACIER	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Gilkey Glacier and Backcountry	510	510	510	510	510	510
Mendenhall Glacier	5,455	5,455	5,455	5,455	5,455	5,455
Herbert Glacier	546	546	546	546	546	546
Lemon Glacier	455	455	455	455	455	455
Norris Glacier	182	182	182	182	182	182
Taku Glacier, Hole-in-the Wall	259	259	259	259	259	259
Total	<u>7,407</u>	<u>7,407</u>	<u>7,407</u>	<u>7,407</u>	<u>7,407</u>	<u>7,407</u>

ALTERNATIVE C						
TABLE 2-6 – MAXIMUM NUMBER OF LANDINGS BY GLACIER				COMPANY: COASTAL HELICOPTERS, INC.		
NAME OF GLACIER	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Gilkey Glacier and Backcountry	36	36	36	36	36	36
Taku Glacier, Hole-in-the Wall	28	28	28	28	28	28
Total Coastal	<u>64</u>	<u>64</u>	<u>64</u>	<u>64</u>	<u>64</u>	<u>64</u>

ALTERNATIVE C						
TABLE 2-7 – MAXIMUM NUMBER OF LANDINGS BY GLACIER				COMPANY: ERA HELICOPTERS		
NAME OF GLACIER	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Lemon Glacier	91	91	91	91	91	91
Norris Glacier	3,455	3,455	3,455	3,455	3,455	3,455
Taku Glacier, Hole-in-the Wall	259	259	259	259	259	259
Total	<u>3,805</u>	<u>3,805</u>	<u>3,805</u>	<u>3,805</u>	<u>3,805</u>	<u>3,805</u>

ALTERNATIVE C						
TABLE 2-8 – MAXIMUM NUMBER OF LANDINGS BY COMPANY						
NAME OF COMPANY	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Total Temsco	7,407	7,407	7,407	7,407	7,407	7,407
Total Coastal	64	64	64	64	64	64
Total ERA	3,805	3,805	3,805	3,805	3,805	3,805
Total All Companies	<u>11,276</u>	<u>11,276</u>	<u>11,276</u>	<u>11,276</u>	<u>11,276</u>	<u>11,276</u>

E. ALTERNATIVE D – AUTHORIZE MID LEVEL NUMBER OF LANDINGS THROUGH 1999

This alternative authorizes additional helicopter landings each year through 1997, after which authorized landings would remain at the 1997 level, 18,781 landings (Table 2-4). The daily landing times at the Icefield for all landing tours would be limited to 9:00 am through 7:00 pm.

In addition, helicopter landings on the Icefield would not be allowed on one weekend day each week. This day would be whichever weekend day has the least amount of cruiseship passengers arriving in Juneau over the summer and would be determined before the start of each season. The number of landings would be as shown on Tables 2-9, 2-10, and 2-11.

This alternative is intended to address the issues of noise over residential areas, noise disturbance to ground-based recreation users, and impacts to wildlife by limiting daily landing and departure times, not authorizing landings on one weekend day, and capping the landings at the 1997 level.

ALTERNATIVE D						
TABLE 2-9 – NUMBER OF LANDINGS ON GLACIER				COMPANY: TEMSCO HELICOPTERS, INC.		
NAME OF GLACIER	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Gilkey Glacier and Backcountry	510	545	636	1,454	1,454	1,454
Herbert Glacier	546	727	909	1,091	1,091	1,091
Mendenhall Glacier	5,455	6,727	7,182	7,636	7,636	7,636
Lemon Glacier	455	182	272	364	364	364
Norris Glacier	182	272	364	364	364	364
Taku Glacier, Hole-in-the Wall	259	545	636	727	727	727
Twin Glacier	0	91	182	272	272	272
Total	<u>7,407</u>	<u>9,089</u>	<u>10,181</u>	<u>11,908</u>	<u>11,908</u>	<u>11,908</u>

ALTERNATIVE D						
TABLE 2-10 – NUMBER OF LANDINGS ON GLACIER				COMPANY: COASTAL HELICOPTERS		
NAME OF COMPANY	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Gilkey Glacier and Backcountry	36	36	55	55	55	55
Eagle Glacier	0	55	73	73	73	73
Herbert Glacier	0	55	73	73	73	73
Taku Glacier, Hole-in-the Wall	28	27	36	36	36	36
Total	<u>64</u>	<u>173</u>	<u>237</u>	<u>237</u>	<u>237</u>	<u>237</u>

ALTERNATIVE D						
TABLE 2-11 – MAXIMUM NUMBER OF LANDINGS ON GLACIER				COMPANY: ERA HELICOPTERS		
NAME OF GLACIER	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Gilkey Glacier and Backcountry	0	182	237	273	273	273
Lemon Glacier	91	182	273	364	364	364
Death Valley	0	182	227	273	273	273
Norris Glacier	3,455	5,136	5,614	6,091	6,091	6,091
Taku Glacier, Hole-in-the Wall	259	45	68	91	91	91
Twin Glacier	0	182	227	272	272	272
Total	<u>3,805</u>	<u>5,909</u>	<u>6,646</u>	<u>7,364</u>	<u>7,364</u>	<u>7,364</u>

ALTERNATIVE D						
TABLE 2-12 – TOTAL NUMBER OF ICEFIELD LANDINGS BY COMPANY						
NAME OF COMPANY	ACTUAL	PROPOSED				
	1994	1995	1996	1997	1998	1999
Total Temsco	7,407	8,633	10,180	11,180	11,180	11,180
Total Coastal	64	173	237	237	237	237
Total ERA	3,805	5,727	6,409	7,364	7,364	7,364
Grand Total	<u>11,276</u>	<u>14,533</u>	<u>16,826</u>	<u>18,781</u>	<u>18,781</u>	<u>18,781</u>

F. ALTERNATIVE E – SATELLITE HELIPORT

This alternative is the same as the Alternative B - Proposed Action except that a new heliport, which would direct flight paths for landing tours away from residential areas would be required before any permits would be issued. This heliport proposal would be a satellite station

located near the Eagle Beach area, between miles 25 and 28 on the Glacier Highway, shown on Map 5, Proposed Satellite Heliport. This heliport would be used by any operators whose flight paths are over Heintzleman Ridge and Mendenhall Valley. Helicopters would fly to the satellite heliport in the morning and returned to their base heliport in the evening. These flights would travel over Lynn Canal. The total landings would be 22,290 (Table 2-4), the same

as Alternative B – Proposed Action.

This alternative is intended to address the issues of existing and increasing noise over residential areas and noise and visual disturbance to ground based recreation users by relocating the departure point and helicopter flight paths to reduce overflights of residential areas. While the Forest Service cannot require relocation of private heliports, this alternative is included to display the consequences of a feasible method, outside the jurisdiction of the Forest Service, to address an environmental issue.

Additional environmental analysis of the satellite heliport would be required following submittal of heliport design. Helicopter landing tours would be authorized at the 1994 level while construction of the heliport occurs. Helicopter landings at the Mendenhall Glacier in 1996 would not be allowed unless from the satellite heliport.

This alternative is intended to address the issues of noise over residential areas and noise and visual disturbance to ground based recreation users by authorizing landings only up to current levels and not authorizing landings on major holidays and one day each weekend.

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G. ALTERNATIVE F – 1999 LEVEL WITH LIMITED HOURS AND DAYS

This alternative would be similar to Alternative C – Authorize Current Level of Landings Through 1999, which limits the number of landings to 11,276 (Table 2-8), the level approved for 1994, with the additional restriction of limiting landing of all tours at the Icefield to the hours of 9:00 am through 6:00 pm. as in Alternative D – Authorize Mid Level Number of Landings Through 1999. Helicopter landing tours would not be allowed one weekend day each week. This day would be whichever day has the least amount of cruiseship passengers arriving in Juneau for that year and would be determined prior to the start of each season. Helicopter landing tours would also not be allowed on Memorial Day, Independence Day, and Labor Day.

H. COMPARISON OF ALTERNATIVES

TABLE 2-13 COMPARISON OF ALTERNATIVE COMPONENTS				
ALTERNATIVE	MAXIMUM NO. OF LANDINGS	LANDING HOURS	DAYS/ WEEK	HELIPORT
A No Action	0	0	7	No Change
B Proposed Action	1999 Proposed (22,290 Landings)	8:30 am - 8 pm	7	No Change
C Authorize Current Level of Landings Through 1999	1994 Permitted (11,276 Landings)	8:30 am - 8 pm	7	No Change
D Authorize Mid Level No. of Landings Through 1999	1997 Proposed (18,781 Landings)	9:00 am - 7 pm	6	No Change
E Satellite Heliport	1999 Proposed (22,290 Landings)	8:30 am - 8 pm	7	Move to Eagle Herbert River
F 1994 Level with Limited Hours Per Day	1994 Permitted (11,276 Landings)	9:00 am - 6 pm	6	No Change

Table 2-14 GLACIER LANDINGS BY OPERATOR			
GLACIER	TEMSCO	COASTAL	ERA
Gilkey Glacier & Backcountry	✓	✓	✓
Eagle Glacier		✓	
Herbert Glacier	✓	✓	
Mendenhall Glacier	✓		
Lemon Glacier	✓		✓
Death Valley			✓
Norris Glacier	✓		✓
Taku Glacier, Hole-in-the-Wall	✓	✓	✓
Twin Glacier	✓		✓

TABLE 2-15 : MAXIMUM HELICOPTER LANDINGS BY GLACIER FOR 1999 (BY ALTERNATIVE) ALL COMPANIES						
GLACIER	A	B	C	D	E	F
Gilkey Glacier & Backcountry	0	1,364	546	1,782	1,364	546
Eagle Glacier	0	109	0	73	109	0
Herbert Glacier	0	1,564	546	1,163	1,564	546
Mendenhall Glacier	0	8,182	5,455	6,909	8,182	5,455
Lemon Glacier	0	1,091	546	728	1,091	546
Death Valley	0	364	0	273	364	0
Norris Glacier	0	7,590	3,637	6,455	7,590	3,637
Taku Glacier, Hole-in-the-Wall	0	1,117	546	854	1,117	546
Twin Glacier	0	909	0	544	909	0
TOTAL	<u>0</u>	<u>22,290</u>	<u>11,276</u>	<u>18,781</u>	<u>22,290</u>	<u>11,276</u>

Graph 2-1

Total Helicopter Landings (by Alternative)

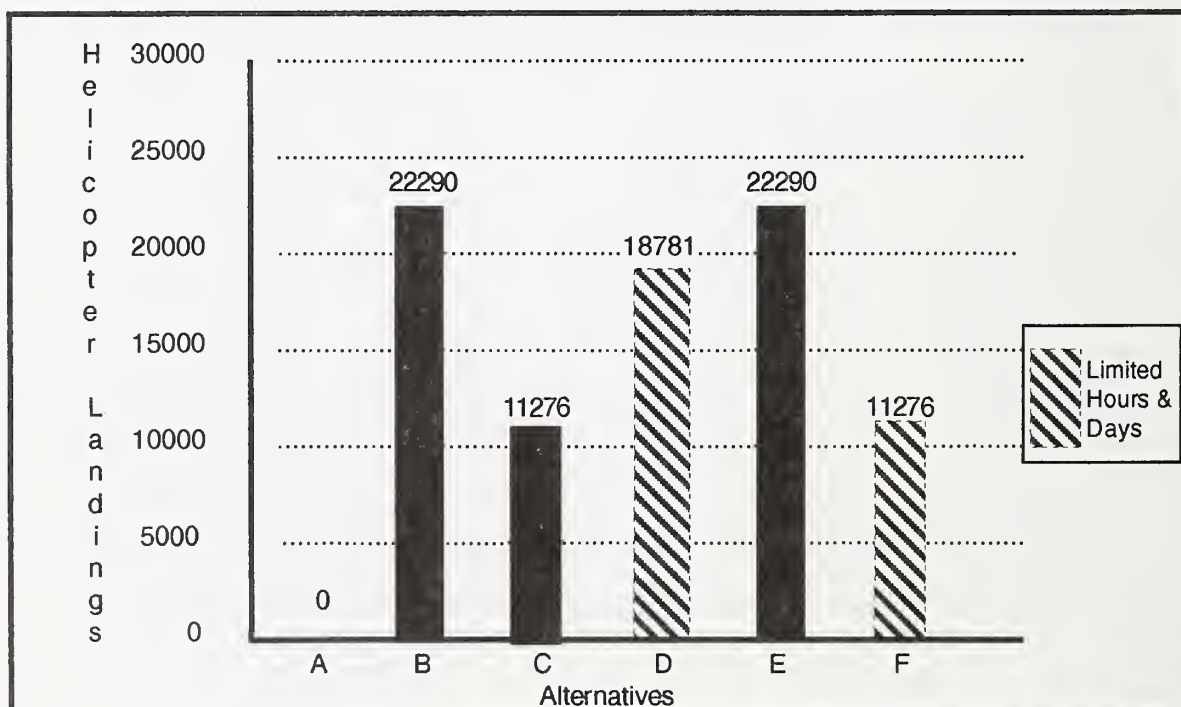


TABLE 2-16 AVERAGE INCREASE IN FLIGHTS PER DAY (BY ALTERNATIVE)							
NAME	1994 TOTAL FLIGHTS PER DAY	A	B	C	D	E	F
Temsco (Mendenhall)	39	0	13	0	18	13	8
Temsco (Explorer)	14	0	28	0	13	28	17
Coastal	0.5	0	2	0	2	2	1
ERA	27	0	36	0	30	33	6
Total	81	0	79	0	63	76	32
% Increase Over 1994	N/A	0%	98%	0%	78%	111%	40%

I. MITIGATION

The following operational guidelines will be required for all action alternatives:

1. Issue a Chatham Area Forest Order, under authority of 36 CFR 261, Subpart C §26.70, which will prohibit point-to-point helicopter transport of passengers, without a special use permit, within any of the area described in Map 1. This Forest Order will require that any commercial helicopter landings on this Juneau Icefield Area be authorized by special use permit. Exceptions will be for emergency services, administrative use, and access to the existing icefield research stations. A commercial helicopter landing is any landing conducted for pay.
2. Issue a Forest OrderAll authorized operations will provide for on-going coordination with FAA to achieve safe air operations (routing, airspace separation and coordination with other operators).
3. All operations will maintain 1000 foot vertical and horizontal clearance and/or avoidance of key mountain goat breeding and kidding areas, mountain goats, bird nesting areas, brown and black bears, moose, sea lions and other marine mammals, shown on Map 6.
4. Flight paths will avoid spring mountain goat kidding areas from May 15 through June 15, shown on Map 6.
5. All authorized operations will adhere to U.S. Fish and Wildlife recommendations (US Fish and Wildlife Service, 1992) of:
 - a. Maintain established travel routes, but avoid any eagle nest by at least 1/4 mile (1,320 feet).
 - b. Helicopters must avoid hovering and circling around any eagle nest.
 - c. Report to the U.S. Fish and Wildlife Service office and the Forest Service any eagle nests found that are not indicated on the map provided

6. Do not hover, circle or harass wildlife in any way. This refers particularly to mountain goats, eagles, bears, sea lions and other marine mammals, but includes all other species.
7. All operations will be required to report observations of mountain goats, brown and black bear, moose, wolf and wolverines to the Forest Service on Wildlife observation forms/maps by November 1 of the operating year.
8. All authorized operators will be required to submit and abide by a Safety and Operating Plan which will be approved by the Forest Service and FAA and will be a part of the special-use permit.
9. Develop training video for helicopter pilots and general public detailing appropriate aircraft behavior in regards to wildlife.

J. ALTERNATIVES ELIMINATED FROM DETAILED STUDY

Several options were suggested and considered but were not carried forward as alternatives. These options and the reason for not considering are discussed below.

Reduce the Number of Landings Allowed Below 1994 Levels

The option of reducing the number of landings allowed to a level below the currently permitted level does not meet the purpose and need of meeting the current public demand for providing the opportunity to experience and set foot on a glacier. Projections for cruiseships stopping in Juneau show an increase for the foreseeable future. The current levels of helicopter tours may meet existing demand, but reduced levels would not. This alternative was dropped from further study.

Move Heliport to Montana Creek or Lemon Creek

Authorizing helicopter landings only if Temsco's heliport was moved to the areas of either Montana Creek or Lemon Creek would not result in a reduction of noise to residential areas from takeoffs and landings. A Forest Service sound study (USDA Forest Service, 1994a) determined that a heliport in the Montana Creek area would likely result in more of an impact than the current site. Therefore, only the option of locating an alternative heliport site away from residential areas was considered.

Forest Service-Designated Flight Paths

The alternative of authorizing helicopter landings on the Icefield only using Forest Service-designated flight paths was dismissed for several reasons. As discussed in Chapter 1, the Forest Service does not have the authority to stipulate or enforce flight paths for helicopters. In addition, assuming that heliports remained at the current locations, the flight paths used are generally dictated by the weather. Most flights are up Heintzleman Ridge during clear days or days with high clouds. On days with low clouds or fog, the flight paths are more towards the Mendenhall Valley. These routes were developed by Temsco coordinating with residents in these areas. Because of the close proximity of residential areas to one another, moving flight paths one way or the other would reduce impacts to some residents but at the same time would increase impacts to others by rerouting flights over other residents. Therefore, directing the helicopter tour companies to fly specific routes would not be practical and would not decrease impacts but rather move them around.

Requiring Larger Helicopters

Temsco has voluntarily switched to A-star helicopters, which carry more passengers and generate less noise than the previously used Hughes 500's. Larger helicopters would require fewer trips because they would carry more passengers per trip but would generate more noise with each trip. The Forest Service does not have authority to stipulate the type of helicopters used by the tour companies.

K. FOREST SERVICE PREFERRED ALTERNATIVE

The Forest Service Preferred Alternative is either Alternative B – Proposed Action or Alternative D – Authorize a Mid Level Number of Landings Through 1999. The Preferred Alternative would also contain a feature found in Alternative C – Authorize a Current Level of Landings Through 1999, which is to not allow landings in the Eagle Glacier and Death Valley management zones. These areas of the Juneau Icefield are currently closed to helicopter landings and would remain closed.

[End of chapter]

CHAPTER 3 – AFFECTED ENVIRONMENT

A. INTRODUCTION

This chapter discusses the existing environment, or baseline, of the area affected by the proposed action or alternatives. The resources that would be affected by the proposed project are described.

B. AIRPORT INFLUENCE ZONE

The Airport Influence Zone is shown on Map 8. This influence zone is a three nautical mile radius around the airport. Within this zone, FAA has direct control over aircraft flight paths. They do not have authority over aircraft noise other than jets. The City and Borough of Juneau is the agency responsible for managing noise within this influence zone, however, if the City and Borough of Juneau were to approve a noise ordinance, it would have to have FAA concurrence.

C. JUNEAU ICEFIELD

The defined area of the Icefield is the same as the 1987 Environmental Assessment except for the addition of the Wright Glacier area in the Twin Glacier Zone.

D. ACOUSTICAL ENVIRONMENT

Measurements of helicopter sound and the ambient background sound were made at twelve locations throughout Juneau to aid in the assessment of the sound impact of helicopter tours (USDA, Forest Service, 1994a). These measurements were recorded on tape and analyzed in the laboratory to allow comparisons

of the overall environmental sound levels with and without the helicopter sound present. This chapter discusses the noise levels without the helicopters present.

The following twelve measurement sites were chosen and are shown on Map 9, Sound Study Measurement Sites. The background noise results are also presented.

Site #1 Located near the center of an approximately ½ square mile residential area, called Totem Park, about ¼ mile northwest of Juneau Airport, near the Mendenhall Wetlands State Game Refuge. The residential area is surrounded on three sides by industrial and commercial zoned areas.

This site is approximately one mile west of the Heintzleman Ridge Trail and three miles south of the Dredge Lakes trails.

Sound sources that contributed to the overall background sound level included numerous fixed wing propeller driven aircraft, trucks and cars driving on the adjacent roads, and jet aircraft takeoffs.

Site #2 Located on the shore of Auke Bay, in a residential area approximately one mile south of Glacier Highway along Fritz Cove Road on the west side of the Mendenhall Peninsula. This site is approximately two miles west of Juneau Airport and helicopters can be seen and heard from the site as they fly their west flight routes.

This site is approximately three miles west of the Heintzleman Ridge Trail and 3½ miles southwest of the Dredge Lake trails.

Sound sources contributing to the overall background level included jet takeoffs, fixed wing propeller driven aircraft, automobile traffic on the adjacent road, and the wake of a passing ship breaking on the shore of Auke Bay.

Site #3 Located in a relatively quiet residential neighborhood near Mendenhall Lake and National Forest System lands. The residential area is approximately 0.2 miles by 0.3 miles in size and is located approximately four miles north of Juneau Airport.

This site is approximately ¼ mile east of the Dredge Lake trails and ⅙ mile from the West Glacier Trailhead..

At this site, the background sound level was relatively low and mainly consisted of distant fixed wing propeller and jet powered aircraft sound.

Site #4 Located approximately ¼ mile north of Juneau Airport, in the same general area as Site #1. This location is surrounded by Egan Drive, Glacier Highway, and Mendenhall Loop Road. The site is located on the southern end of the subdivision and is closest to the airport.

The background sound during this test segment consisted of numerous takeoffs by fixed wing propeller driven aircraft, a jet takeoff, and cars and trucks driving on the adjacent residential street.

Site #5 Located in a residential area along Glacier Highway (which runs parallel to Egan Drive) approximately 1/2 mile

southeast of Temsco's heliport location on the Juneau Airport. The site is at the southern base of Heintzleman Ridge.

This site is close to the trailhead of the Heintzleman Ridge Trail.

The background sound at this site consisted of almost constant sound from the adjacent roadways, sound from fixed wing jet and propeller driven aircraft, and some sound from neighbor's cars on the driveway directly adjacent to the test site.

Site #6 Located along Glacier Highway, in the same general area as Site #5, but is approximately 0.15 miles closer to the Temsco Heliport area.

The background sound level was relatively high at this site and made it difficult to distinguish helicopter sounds from the almost constant sound from road traffic on the adjacent road and highway.

Site #7 Located in Lemon Creek Valley, approximately three miles east of Juneau Airport between the Blackerby Ridges, on the west side of a subdivision which measures approximately one-half mile by one-third mile, and borders a commercial and industrial area to the south.

This site is approximately 1½ miles east of the Heintzleman Ridge Trail.

The background sound at this site consisted of distant road traffic sound, fixed wing jet and propeller driven aircraft, a neighbor's barking dog, and local traffic on the adjacent residential street.

Site #8 Located across the Gastineau Channel from downtown Juneau, in west Juneau, approximately seven miles southeast of Juneau Airport. The site is at the top of the Blueberry Hills subdivision, approximately 500 feet above sea level at the base of the mountains on Douglas Island.

This site is not close to any trails identified in the issues section.

The background sound was dominated by the floatplane operations from Gastineau Channel, near downtown Juneau.

Site #9 Located in a small residential area approximately five miles southeast of Juneau Airport, at the southwest base of Blackerby Ridge, near Salmon Creek.

This site is not close to any trails identified in the issues section.

Background sound at this site consisted of road traffic sound from the nearby highway, fixed wing jet and propeller driven aircraft, and wind blowing through the trees. A small amount of sound could be heard from children playing and traffic on the adjacent residential streets.

Site #10 Located approximately one mile north of the Mendenhall Glacier Visitor Center, on the East Glacier Loop Trail, approximately 300 feet above sea level and is about 5 miles north of Juneau Airport.

This site is approximately one mile northeast of the Dredge Lakes Trail and 2 miles east of West Glacier Trail.

Background sound at this site consisted of fixed wing aircraft sound, wind sound, and some sound from hikers on the trail.

Site #11 Located approximately 4,200 feet above sea level, six miles north of Juneau Airport, on Bullard Mountain.

This site is one mile north of the East Glacier Loop Trail.

The background sound level at this site was low and consisted of sound from a distant waterfall, distant road traffic in the valley below, and fixed wing aircraft sound.

Site #12 Located at the top of Heintzleman Ridge, at approximately 2,800 feet above sea level, and three miles northwest of Juneau Airport. A high level of wind noise at this site prevented a meaningful analysis, and, therefore, results from this site are not included in this analysis.

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Summary of Test Results

The results of the sound measurements are:

TABLE 3-1 SOUND MEASUREMENT TEST RESULTS	
SITE #	BACKGROUND LEVELS (DB)
1	51.8
2	57.4
3	39.3
4	53.5
5	54.3
6	61.3
7	47.3
8	54.0
9	52.5
10	49.4
11	37.2
12	Too much wind noise

E. RECREATION PLACES:

Mendenhall Glacier Recreation Area

The Mendenhall Glacier Recreation Area is an area designated by the Forest Service for the purpose of public recreation use. This area is located in the northern portion of the Mendenhall Valley (see Map 10). It receives over 280,000 visitors per year. Activities within this area include camping, picnicking, hiking, sightseeing, boating, and off-road vehicle use. Mendenhall Glacier Campground, Mendenhall Glacier Visitor Center, Dredge and Moraine Lakes Units, Skater's Cabin, and an extensive trail system all exist within this recreation area.

Trails

Helicopter landing tour flights can be heard from most trails located within the Mendenhall Glacier Recreation Area (MGRA), shown on Map 10: MGRA Trails. These trails consist primarily of routes within the Dredge Lake and Moraine Lakes Management Units, and total approximately 17 miles.

There are six main trails within this area which are traveled by a substantially greater number of people per day due to their proximity to the Mendenhall Visitor Center and the Mendenhall Glacier. These trails are:

1. West Glacier Trail (3.4 miles)
2. East Glacier Loop Trail (3.5 miles)
3. Trail of the Glacier (.5 mile)
4. Nugget Creek Trail (4 miles)
5. Steep Creek (.5 mile)
6. Moraine Ecology Trail (1.5 miles).

Mendenhall Glacier Visitor Center

The Mendenhall Glacier Visitor Center receives over 265,000 visitors during the year.

Helicopters can be seen and heard from the area around the visitor center. Center employees received several complaints during the 1993 summer season. These complaints indicate that some of these visitors have their enjoyment of the visitor center affected by helicopter noise.

Mendenhall Glacier Campground and Skater's Cabin Day-Use Site

The Mendenhall Glacier Campground receives approximately 11,780 visitors each summer season (USDA Forest Service, 1994b). This campground is open between May 15 and September 15 each year. This campground provides 60 camping sites, with each site holding approximately 5 persons. Most visitors to this campground are car campers,

backpackers, or RV campers who are visiting Juneau and usually stay from 2 to 14 days. Persons staying at this campground can hear and see helicopters traveling on landing tour flight paths.

Skater's Cabin Day Use Site receives use comparable to the Mendenhall Glacier Campground and is located adjacent to the campground. The users at this site, however, are day use picnickers, hikers, bicycle users, rafters, wind surfers, kayakers, and persons viewing scenery.

Trails Outside the Mendenhall Glacier Recreation Area

The eight trails located outside the Mendenhall Glacier Recreation Area from which helicopter noise and sightings of helicopters flying the landing tour flight paths can be encountered are:

1. Heintzleman Ridge Trail (9.5 miles)
2. Montana Creek Trail (7.2 miles)
3. Spaulding Meadows Trail (3 miles)
4. Auke Nu Trail (2.5 miles)
5. Herbert Glacier Trail (4.6 miles)
6. Amalga Trail (7 miles)
7. Windfall Trail (3.5 miles)
8. Peterson Lake Trail (4.3 miles)

The types of uses occurring on these trails are: bicycle use, hiking, off road vehicle use, viewing scenery, viewing wildlife, hunting, running.

F. WILDLIFE

The area of analysis for wildlife resources includes the Juneau Icefield and the helicopter flight paths used to reach the Icefield. The Eagle and Herbert Rivers are also included in the area of analysis as related to Alternative E – Satellite Heliport. Specific zones are discussed as separate sections because wildlife use and

habitats are unique within each zone. Wildlife concerns focus primarily on mountain goats, but other species are briefly discussed.

The public, as well as state and federal agencies, have recently directed more attention to management of mountain goats and their habitat. This species has been shown to be vulnerable to aircraft and resource development activity in other areas, and because opportunities to view mountain goats locally have been highlighted as a watchable wildlife opportunity.

The impacts of noise, helicopter activity, and other mining-related activities on mountain goats have been identified as a management concern in relation to recent large scale mine proposals for the Juneau area.

Alaska Department of Fish and Game (ADF&G) is continuing a telemetry project to determine movement patterns, habitat use and home range information in relation to mining at both the Kensington Mine site, located approximately 45 miles north of downtown Juneau, and at the site of the proposed AJ Mine, near downtown Juneau.

Mountain goat ecological relationships, distributions and population numbers in the area adjacent to the Icefields and affected by helicopter landing tours are similar to those in the areas of the Kensington Mine. More is known about mountain goats (habitat) in the area between the Mendenhall Glacier and Berner's Bay as a result of studies conducted through ADF&G (Fox, Smith, 1989) known for other areas. Information collected for the 1987 EA written for Temsco helicopter landing activity included descriptions and delineations of mountain goat winter habitat and kidding habitat. Habitat used during these time periods is thought to be limiting and is the most important habitat to maintain and protect.

Management Indicator Species models have been prepared for selected species on the Tongass National Forest including mountain goats. Habitat quality reduction factors were used within 5 and 25 mile radii of intense development and helicopter activity to give an indication of how suitable habitat might be affected. (Suring, H.B., 1988)

Considering this discussion, it seems reasonable to carry forth the same affected environment in regard to helicopter activity associated with the Kensington mine project when discussing proposals for helicopter tours (USDA Forest, 1992b). It should also be noted that the mountain goat populations in the Juneau area have an added significance in that they can be visible from areas accessible from the Juneau road system and have the potential to be viewed by thousands of residents and visitors each year.

Juneau Icefield Backcountry

Wildlife resources are minimal in the zone of permanent ice. Habitats associated with the flight paths to and from the Icefield Backcountry are of primary concern in evaluating effects.

Gilkey Glacier

Mountain goats occur in the mountainous areas surrounding the Gilkey Glacier. Alaska Department of Fish and Game has not identified specific kidding or breeding areas adjacent to the Gilkey Glacier. Black and brown bears also occur in the area, and forage in the high country adjacent to the glacier in spring, summer and fall. Wolves occur in packs that wander, particularly in spring, summer and fall in the alpine and subalpine country adjacent to the icefield. Wolves den and raise their young in these alpine and subalpine areas. Wolverines are recorded for this area. In addition, moose are present in the Berner's Bay area and up the Gilkey River to the lake at the foot of the

glacier. Trumpeter swans were reported for the first time in 1994, probably a nesting pair, near the mouth of the Antler/Gilkey Rivers.

Eagle Glacier and River

Mountain goats occur in the mountainous areas surrounding Eagle Glacier. Specific kidding and breeding habitat has not been delineated. Black and brown bears occur in the area, and forage in the high country adjacent to the glacier in spring, summer and fall. Bears also use the river valley all the way to tidewater. Wolves occur in packs that wander, particularly in spring, summer and fall in the alpine and subalpine country adjacent to the icefield. Wolves den and raise their young in these alpine and subalpine areas. Wolverines are observed in the high country, as well as in the river drainage, particularly in winter. Trumpeter swans have recently been reported in Windfall Lake in the summer, nesting has not yet been documented, although Trumpeters seem to be expanding their breeding range farther into Southeast Alaska.

Eagle River is noted for its habitat diversity and species richness. Abundant beaver ponds create rich songbird, woodpecker and waterfowl habitat. Northern goshawks are known to nest in the valley, and other raptors, including owls, are frequently observed. River otters can be found along the river throughout the seasons. Eagle nests occur within this zone.

Herbert Glacier and River

Mountain goats occur in the mountainous areas surrounding Eagle Glacier. Specific kidding and breeding habitat is delineated in the Map section of this document (Map 6). Black and brown bears occur in the area, and forage in the high country adjacent to the glacier in spring, summer and fall. Bears also use the river valley all the way to tidewater. Wolves occur in packs that wander, particularly in spring, summer and fall in the alpine and subalpine country adjacent

to the icefield. Wolves den and raise their young in these alpine and subalpine areas. Northern goshawks have been seen and heard in the valley. Despite intense efforts, a nest has not yet been located. Other raptors, including owls, are frequently observed. Wolverines occur in the high country and in the valley, particularly in winter.

Herbert River is also noted for its habitat diversity and species richness. Abundant beaver ponds create rich songbird, woodpecker and waterfowl habitat. In 1994, Forest Service biologists located fledged juvenile goshawks at Windfall lake. It was late enough in the season that a nest could not be located. Trumpeter swans have recently been reported in Windfall Lake in the summer, nesting has not yet been documented, although Trumpeters seem to be expanding their breeding range farther into Southeast Alaska. Eagle nests occur within this zone (see Map 6).

Mendenhall Glacier and Valley

Mountain goats are readily observed on Mt. Bullard from the Mendenhall Glacier Visitor Center observatory during all months of the year. Mountain goats are also present, though less easily viewed, on Mts. McGinnis and Stroller White. Map 6 delineates mountain goat kidding and breeding habitat. Black and brown bears occur in the area, and forage in the high country adjacent to the glacier in spring, summer and fall. Wolves occur in packs that wander, particularly in spring, summer and fall in the alpine and subalpine country adjacent to the icefield. Wolves den and raise their young in these alpine and subalpine areas. Wolverines have been documented in the area. Northern goshawks nest in the Nugget Creek valley, and are known to hunt in alpine and subalpine areas up the Mendenhall Glacier. Eagle nests occur within this zone.

Lemon Creek Glacier

Map 6 delineates mountain goat kidding and breeding habitat in relation to Lemon Creek glacier. Black and brown bears occur in the area, and forage in the high country adjacent to the glacier in spring, summer and fall. Wolves occur in packs that wander, particularly in spring, summer and fall in the alpine and subalpine country adjacent to the icefield. Wolves den and raise their young in these alpine and subalpine areas. Wolverines also occur in the area. Eagle nests occur within this zone.

Death Valley

Map 6 delineates mountain goat kidding and breeding habitat locations. Black bears, brown bears, wolves, and wolverines occupy habitats traversed en route to Death Valley. These species use these habitats as previously described. Eagle nests occur within this zone.

Norris Glacier, Taku Glacier, Hole-In-The-Wall, and Twin Glacier

Map 6 delineates mountain goat kidding and breeding habitat locations. Black and brown bears occur in the area, and forage in the high country adjacent to the glacier in spring, summer and fall. Wolves occur in packs that wander, particularly in spring, summer and fall, in the alpine and subalpine country adjacent to the icefield. Wolves den and raise their young in these alpine and subalpine areas. Wolverines also occur in the area. Moose occur in the Taku River drainage, as well as along those rivers and streams flowing into the Taku. Eagle nests occur within this zone. This area has been identified as an important big game hunting area.

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

A. INTRODUCTION

This chapter provides the analytical basis for comparison of the project alternatives (Chapter 2). It discusses the anticipated environmental effects associated with implementation of the action alternatives in comparison to Alternative A – No Action.

Effects Common to All Issues and Alternatives: Flight Path and Noise

Measurements of helicopter sound and the ambient background sound were made at twelve locations throughout the Juneau area (USDA Forest Service, 1994a). These measurements were recorded and analyzed in the Forest Service' San Dimas Technology and Development Center laboratory to allow comparisons of the overall environmental sound levels with and without the helicopter sound present. The main focus of these

measurements was on the impact of helicopter sound on local residents. The method used in this study compares the equivalent sound level (Leq) of the background or ambient sound to the level with helicopter sound included. This allows the helicopter landing tour activities' contribution to the total sound level for that time period to be quantified for comparison purposes.

An attempt was made to take measurements during extensive helicopter activities in the area of interest. Sound measurements were taken as nearly as possible, under conditions representing typical helicopter flight conditions (elevation, frequency and number of ships). The frequency of flights used in the study (one group of five helicopters every twenty-five minutes) represents the highest frequency anticipated under any alternative.

The results of these measurements are shown on Table 4-1.

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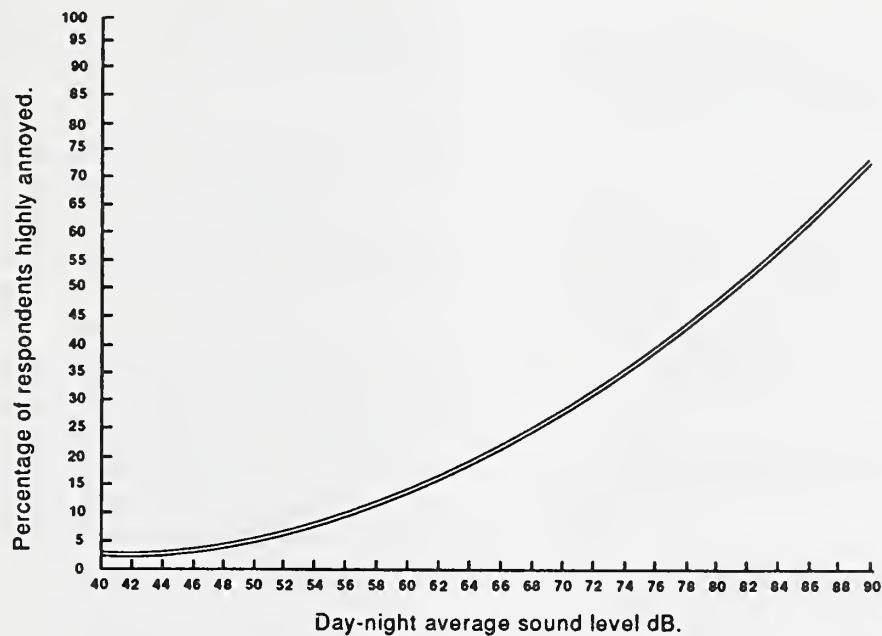
TABLE 4-1 – SOUND MEASUREMENT TEST RESULTS (IN DECIBELS)			
SITE #	COMBINED LEQ (dBA)	BACKGROUND LEQ (dBA)	CHANGE LEQ (dBA)
1	56.4	51.8	4.6
2	57.9	57.4	0.5
3	47.7	39.3	8.4
4	55.3	53.5	1.8
5	54.9	54.3	0.6
6	61.7	61.3	0.4
7	50.3	47.3	3
8	55.4	54.0	1.4
9	54.0	52.5	1.5
10	54.5	49.4	5.1
11	46.4	37.2	9.2
12	T o o m u c h w i n d n o i s e		

The relationship between noise exposure and level of community annoyance was used as a general guideline for this analysis to assess the acoustic impact of the helicopter operations. The difference between the annoyance percentage for the background and combined sound levels indicates the relative noise impact for each site. An index known as the "Percent Highly Annoyed," based on an

analysis of complaint patterns at various airports nationwide has been developed and is based on standard techniques (Harris, 1991). This "Percent Highly Annoyed" correlates well with different levels of noise, and has been adopted by the FAA and Environmental Protection Agency. (Alaska State Legislature, 1993).

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Graph 4-1
Relationship Between Noise Exposure and Percentage of Community Highly Annoyed.



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The study concluded that the sound levels from the helicopters in the noise study were not high enough, nor of long enough duration, to pose a threat to hearing safety for either humans or animals. Therefore, the only acoustic impact resulting from the helicopter sounds is that of annoyance to people who reside in areas close to the helicopter flight paths.

The overall impact, as gauged by an increase on the annoyance-percentage graph, due to the helicopter sounds, is low for most of the measurement sites during the study. Even the sites with a larger difference between the background and combined levels still had overall sound levels that rated relatively low on the annoyance-percentage relationship graph.

Other sound sources such as fixed wing propeller and jet aircraft, road traffic, and other human-made sounds are prevalent at most of the measurement sites. Higher background sound levels from these other sources tend to mask the helicopter sounds, to some extent. Therefore, areas with these higher background sound levels would tend to be less impacted by the helicopter sounds.

Depending upon the continued demand for helicopter tours (both landing and flightseeing tours) there may be little difference in the effects generated by any alternative. The effects created by each alternative can be broadly divided into physical impacts at the Icefield landing sites and secondary effects, primarily noise, resulting from helicopter overflights of residential, recreational, and wildlife areas. Physical disturbance at the Icefield landing sites is insignificant because of the nature of the sites and is not a function of the number of landings. The secondary effects of helicopter overflights to and from the Icefield landing sites are the same regardless of whether the helicopters land or

remain airborne, but the number of overflights increases the duration of disturbance. For alternatives which constrain or limit the number of Icefield landings, helicopter companies, in order to meet demand, have the option of continuing to market helicopter rides as flightseeing tours using the same flight paths as landing tours. Assuming that the demand is being met, the same number of helicopters could be creating the same effect on residents, recreationists, and wildlife under all alternatives, including Alternative A – No Action.

The three helicopter companies are interested in new low noise helicopters. They will likely begin integrating these low noise helicopters into their fleet in the next five years. Use of low noise helicopters could lessen the current noise levels indicated in the sound study (USDA Forest Service, 1994a).

If the number of landings authorized under the alternatives does not meet demand, then flightseeing tours without landings could be used to meet demand. Consequently, the number of flights from the combination of landing and flightseeing tours could equal demand, which is expected to be equal to Alternative B – Proposed Action.

Effects Common to All Issues and Alternatives: Permits Required for Commercial Helicopter Landings on the Juneau Icefield

This mitigation requires all helicopters landing commercially on the Juneau Icefield Area (Map 1) to have a special use permit to conduct this activity.

Currently the Forest Service Policy described in Forest Service Manual 2721.53 (USDA Forest Service, 1992d) allows charter

helicopter landings on the icefield to occur without a special use permit. Charters are helicopter operations which provide point-to-point transportation at competitive fee rates to National Forest System Lands without providing customer care, tutorage, supplies or equipment.

The effect of these charters is increased helicopter landing on the Icefield which currently is not regulated by special use permit. Because of this additional use, which is occurring at this time, the cumulative noise effect of helicopter travel to the Icefield is increased. This mitigation will require all helicopter landings to fall within the guidelines of every alternative displayed in this document. For all of the action alternatives, every commercial helicopter landing within the area described on Map 1 will require authorization by a special use permit from the Forest Service and would be under the number-of-landings constraint in each alternative. This would eliminate the noise effects of charter commercial helicopter landings to the Icefield.

Flightseeing may still occur at the level of demand, however no landings would occur. The effect of flightseeing would be cumulative to the authorized helicopter landings approved by this document, however the Forest Service does not have the authority to regulate the airspace, only the landings.

B. ISSUE 1 – NOISE TO RESIDENTIAL AREAS

This issue deals with the concerns that the noise made by helicopters traveling from the Juneau Airport area to the Mendenhall Glacier could impact the quality of life for residents in the Mendenhall Valley, Fred Meyer, Auke Lake, Juneau Airport, and Lemon Creek areas.

Effects Common to All Alternatives: Flight and Path Noise.

The issue of noise impacts over residential areas arises primarily from Temsco flights to the Mendenhall Glacier which fly over the Mendenhall Valley, Fred Meyer area, Auke Bay/Fritz Cove, and Lemon Creek areas. This analysis will focus on the impacts from the tours to the Mendenhall Glacier. Temsco was the only permit applicant authorized to land on the Mendenhall Glacier in 1994 and is the only company applying for permits to land there through 1999.

The locations of the twelve measurement sites have been described in Chapter 3 and are shown on Map 9. By discussing the results of the Sound Measurement Study of the sites closest to the flight paths which most affect the residential areas, this section can provide an estimate of the level of noise caused by helicopter landing tour traffic and the percent of the community highly annoyed. Sound Measurements Sites 1-9 are closest to flight paths affecting residential areas. The sound measurements for these sites indicate an increase in the Percentage Highly Annoyed from helicopter noise from 0 to 3 percent with an average of 1.2 percent.

The Heintzleman Ridge flight path crosses the least amount of residential area and would have the least amount of effect on residences. The west route crosses over or near residential areas from the end of the airport runway, across Mendenhall Peninsula and Auke Bay. The valley route crosses the most residential area from the end of the runway then along Back Loop Road. This route also generates the most complaints from the public.

The following information is presented as representative of the effect of weather on

flight paths. A "landing" refers to one helicopter landing on the Juneau Icefield. A "flight" refers to one helicopter flying from its base heliport to the Icefield and a return to the heliport.

In 1992, a "bad weather year," 61 percent of Temsco's 5,455 landings at the Mendenhall Glacier flew the Heintzleman Ridge route, 30 percent the western route, and 9 percent the Valley route. In 1993, a "good weather year" and the latest year for which figures are available, 71 percent of their 5,704 landings flew the Heintzleman ridge route, 17 percent flew the western route, and 12 percent flew the Valley route (Temsco, 1994). See Map 7.

Alternative A – No Action

With Alternative A – No Action, special use permits would not be issued to the helicopter tour companies and they would not be authorized to land on the Juneau Icefield. The companies have indicated that, without the permits, they would continue to provide the tours as flightseeing rather than landing tours. They would fly over the icefield without landing. The Forest Service has no jurisdiction over heliport operations or flight paths. The number of flights would likely strive to meet market demand and may be similar to the number shown in Alternative B – Proposed Action. Current flight paths may be expanded as tour operators seek to make flightseeing tours equal to the quality of landing tours by seeking unique visual opportunities. The effects of noise on residents could be similar to Alternative B –

Proposed Action, which by 1999 has a maximum of 22,290 landings on the Icefield.

It is also possible that, without landings, interest in the helicopter tours would be less than the companies' anticipated demand. This could result in a lower number of flights than the proposed action.

The two agencies that would continue to have jurisdictions that could regulate the helicopter tours are the Federal Aviation Administration and the City and Borough of Juneau. The FAA's jurisdiction involves the safety and management of all aircraft within the airport influence zone, a three-nautical-mile radius from the Juneau Airport. (See Map 8.) FAA also requires a minimum flying height of 300 feet above residential areas (FAA, 1994). This is the only elevation restriction imposed by FAA. The CBJ manages the Juneau Airport facilities and has the authority to impose ordinances related to noise limits within the CBJ. There are currently no CBJ ordinances that limit noise levels for aircraft.

Alternative B – Proposed Action

In 1994 Temsco had 5,455 landings for their Mendenhall Glacier Tours (five aircraft per flight). With this alternative, this would increase to 7,269 landings in 1998 and 1999. In a 140-day season, this would be an average of 13 more individual landings per day. Using the average of the percentages flown for the 1992 and 1993 seasons, the number of landings expected for the three routes flown to the Mendenhall Glacier is shown on Table 4-2:

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<p style="text-align: center;">ALTERNATIVE B TABLE 4-2 – NUMBER AND DISTRIBUTION OF LANDINGS FOR THREE ROUTES TO MENDENHALL GLACIER (BASED ON 92-93 AVERAGE)</p>						
ROUTE USED	1994	1995	1996	1997	1998	1999
Heintzleman Ridge (66%)	3,600	4,079	4,320	4,560	4,800	4,800
West Route (24%)	1,309	1,483	1,571	1,658	1,746	1,746
Valley Route (10%)	545	618	655	691	723	723
Total Flights	<u>5,454</u>	<u>6,180</u>	<u>6,546</u>	<u>6,909</u>	<u>7,269</u>	<u>7,269</u>

Residents in the vicinity of these three flight paths would see an increase of 33 percent in the number of flights between 1994 and 1999. As shown in Table 4-2, the actual increase in number of flights would vary from 1,200 per year for the Heintzleman Ridge route, an average of nine more flights per day, to 178 per year for the Valley route, an average of one more flight per day by 1999.

The number of landings from Temsco's Explorer Tour, which has one to two aircraft per tour, would increase from 1,952 in 1994 to the proposed 5,818 landings in 1999. This is the total of Temsco's landings less the landings for the Mendenhall Tour. This would increase the number of flights on the routes shown on Map 2. This would impact the residents from the end of the runway across to Mendenhall Peninsula on to Auke Bay. This impact would be from the sound of helicopters usually in groups of two, which would be of shorter duration, thus less impacting, than the groups of five. This impact of two helicopters every one and one-half hours plus the groups of five every twenty-five minutes would be similar to the existing condition except there would be more hours and more days when this would be occurring. On average, there would be 28 more flights per day from the Explorer Tour.

Coastal Helicopters would increase their landings on the Juneau Icefield by 318 per year from 1994 to 1999. Coastal's flights follow a route similar to Temsco's Explorer Tour and also utilize one to two helicopters per tour. This impact would be negligible on its own but the effects would be cumulative when added to the impacts from the other tours. Coastal's tours would add an average of one to two flights per day over Mendenhall Valley.

ERA Helicopters would increase their landings on the Icefield from 3,805 in 1994 to 8,818 in 1999. Their flights are up Gastineau Channel and Salmon Creek and back through Sheep Creek and cross the fewest amount of residential areas. This 130% increase would result in 38 more landings per day. The impacts from these flights would be to Douglas Island and Downtown Juneau along Gastineau Channel. The sound levels would not increase from each group of helicopters flying over these areas but there would be more flights per day. The effects would not be cumulative with the other flights because they fly different routes than Temsco and Coastal but would add to the floatplane traffic in Gastineau Channel.

The overall effect of this alternative would be to increase the total number of helicopter landings from the 1994 level of 11,271 to 22,290 landings in 1999, for an increase of 11,014 landings. On average, this would mean 79 additional landings per day for all tour companies, for a total of 159 landings per day. This increased helicopter traffic would raise the percent of individuals highly annoyed by helicopter noise.

[Text continues in next column.]

Alternative C – Authorize Current Level of Helicopter Landings Through 1999

The impacts from this alternative would be a continuation of those generated by the flights in 1993 and 1994 since the number of landings would be the same. The number of flights and flight paths flown in 1994 are shown in Table 4-3.

The impacts for residents in the vicinity of these three flight paths would be the same for 1995 through 1999 as those flown in 1994. On average, with a 140 day season, there would be 39 landings per day and eight round trip flights with five helicopters. This would not change with the different routes flown.

ALTERNATIVE C TABLE 4-3 – NUMBER AND DISTRIBUTION OF FLIGHTS FOR THREE ROUTES TO MENDENHALL GLACIER (BASED ON 1992 AND 1993 AVERAGE) NUMBER OF FLIGHTS AND PATHS FOR 1994		
ROUTE	1994 FLIGHTS	1995-1999 (ANNUALLY)
Heintzleman Ridge (66%)	3,600	3,600
West Route (24%)	1,309	1,309
Valley Route (10%)	545	545
Total Flights	5,454	5,454

The Heintzleman Ridge flight path crosses the least amount of residential area and would have the least amount of effect on residences. The west route crosses over or near residential areas from the end of the airport runway, across Mendenhall Peninsula and Auke Bay. The valley route crosses the most residential area from the end of the runway then along Back Loop Road. This route also generates the most

complaints from the public. The impacts for all three routes would remain the same as for 1994.

The number of landings from Temsco's Explorer Tour would also stay the same as in 1994, 1,952 landings, or an average of 14 landings per day with flights of two helicopters in a group. The impact to residents from the end of the runway across to Mendenhall Peninsula

on to Auke Bay from this tour would stay the same. This noise impact is from helicopters usually in groups of two, which would be less impacting than the groups of five.

Coastal Helicopters landings would also stay the same at 64 per year or an average of one flight every other day. This impact would be negligible on its own but would add to the impact from the flights from other tours.

ERA Helicopters landings would stay the same at 3,805 per year or an average of 27 landings per day. Their flights are up Gastineau Channel and Salmon Creek and back through Sheep Creek and cross the least amount of residential areas.

Under this alternative, the percentage of people highly annoyed would be less than Alternative B – Proposed Action because there would not be as many flights and there would be fewer days with flights.

This alternative would not change the current number of helicopter landings (11,276) or average landings per day of 81 for all three companies.

Alternative D – Authorize a Mid Level Number of Landings Through 1999

This alternative would authorize special use permits as requested by the helicopter tour companies through 1997 but would limit the authorizations for 1998 and 1999 to 1997 levels.

The number of landings expected for the three routes flown to the Mendenhall Glacier is shown in Table 4-4. There would be an average increase of ten helicopters per day over the 1994 level of 39 flight per day. Based on a five-helicopter flight, this would equal two additional round trips.

ALTERNATIVE D						
TABLE 4-4 – NUMBER AND DISTRIBUTION OF FLIGHTS FOR THREE ROUTES TO MENDENHALL GLACIER (BASED ON 1992 AND 1993 AVERAGE)						
ROUTE USED	1994	1995	1996	1997	1998	1999
Heintzleman Ridge (66%)	3,600	4,079	4,320	4,560	4,560	4,560
West Route (24%)	1,309	1,483	1,571	1,658	1,658	1,658
Valley Route (10%)	545	618	655	691	691	691
Total Flights	<u>5,454</u>	<u>6,180</u>	<u>6,546</u>	<u>6,909</u>	<u>6,909</u>	<u>6,909</u>

Residents in the vicinity of these three flight paths would find an increase in total flights of 27 percent from the number of landings in 1994 to those for 1999. As shown in the preceding

table, the actual increase in landings would vary from 960 per year for the Heintzleman Ridge route to 146 per year for the Valley route. This

would peak in 1997 and remain the same through 1999.

The Heintzleman Ridge flight path crosses the least amount of residential area and would have the least effect on residents. The west route crosses over or near residential areas from the end of the airport runway, across Mendenhall Peninsula, and Auke Bay. The valley route crosses the most residential area from the end of the runway then along Back Loop Road. This route generates the most complaints from the public.

The number of landings from Temsco's Explorer Tour would increase from 1,952 in 1994 to 4,271 in 1997 but would be 1,546 less than the Alternative B – Proposed Action. This would increase the number of flights on the path shown on Map 4. This would also impact the residents from the end of the runway across to Mendenhall Peninsula to Auke Bay. This impact would be from helicopters usually in groups of two, which would be of shorter duration, with less noise impact than the groups of five. This would be an average increase of 13 helicopters per day, with 140-day season minus one day per weekend.

Coastal Helicopters would increase the number of landings on the Icefield by 173 flights per year from 1994 to 1997, or an average of one to two flights per day. This impact would be negligible on its own but would add to the impact from the flights from other tours, increasing the annoyance level as shown in the sound study.

ERA Helicopters would increase the number of landings on the Icefield from 3,805 in 1994 to 7,364 in 1997, or an average of 2.5 landings per day. This is a decrease of 1,454 in the number of landings over Alternative B – Proposed Action for 1999.

By not flying one weekend day per month, there would be an increase of eight landings per day for the rest of the week. The impacts to residential areas would also be reduced because Icefield landings would not be authorized one weekend day per week. In addition the holidays of Memorial Day, Independence Day, and Labor Day would also not have any glacier landings. Since these holidays tend to be a time of outdoor activities, such as cookouts, this would give residents an extra day of quiet when they are most likely outdoors.

This alternative would increase the total number of helicopter landings from the 1994 level of 11,276 to 18,781 in 1999. Through 1999 this increase in helicopter activity would increase the number of people highly annoyed by helicopter noise. With a 140-day season and losing one weekend day per week, the average daily increase in the number of landings would be 60.

Alternative E - Satellite Heliport

With this alternative, a satellite heliport would be constructed out Glacier Highway between miles 25 to 28. The number of authorized Icefield landings would remain the same as in the proposed action, but noise impacts to residential areas would decrease. There would be one flight over Lynn Canal of a group of helicopters to the satellite heliport in the morning and a return group in the evening.

The flight paths would follow a direct route to the Icefield, up Eagle Glacier, which would avoid flights over Mendenhall Valley, as shown on Map 5. During periods of low cloud cover, the flight paths would be along Glacier Highway back to the west route on the west side of Mendenhall Valley. The flights up Eagle Glacier would not impact residential areas. The flights up the west side of Mendenhall Valley would be the same percentages as for the proposed action (34 percent). The impacts from

flights along this route would also be the same then as for Alternative B - Proposed Action.

The impacts from ERA's flights would be the same as for Alternative B - Proposed Action.

The number of helicopter landings that would be authorized under this alternative is 22,290 the same as Alternative B - Proposed Action. This alternative will base 12,700 of the landings from a location where the flight paths would not be in the vicinity of residential areas. This will lessen the number of individuals highly annoyed by helicopter noise.

Alternative F - 1999 Level with Limited Hours and Days

The effects of this alternative would be similar to Alternative C - Authorize Current Level of Landings Through 1999 in terms of direct noise effects of helicopter overflights. The impacts would be slightly less, however, because in terms of duration of impacts, Icefield landings and departures would be limited to the hours of 9:00 am through 6:00 pm. Landings now begin at 8:30 am, thus the flights would begin one-half hour later. Flights would be ending at 6:00 pm rather than at 9:00 pm.

The impacts to residential areas would also be less because Icefield landings would not be authorized one weekend day per week. Because companies could still schedule flightseeing tours on these days without landing, it is not certain that restricting Icefield landings would substantially reduce noise related impacts to residents. In addition the holidays of Memorial Day, Independence Day, and Labor Day would also not have any glacier landings. Since these holidays tend to be a time of outdoor activities, such as cookouts, this would give residents an extra day of quiet when they are most likely outdoors. However, to have the same number of landings as 1994, by not landing weekends and

holidays, on average, there would be 47 more landings per day to make up this difference.

C. ISSUE 2 – NOISE AND VISUAL DISTURBANCE TO GROUND-BASED RECREATION USERS.

This section will analyze the affects of the six alternatives on the recreation experience of visitors in the vicinity of the flight paths. Recreation activities identified in scoping include: camping, hiking, picnicking and viewing scenery. The effect of helicopters traveling in the vicinity of these activities is the interruption of solitude caused by the noise of the aircraft.

By examining the results from the Sound Study of the sites closest to the flight paths which most affect the trails identified as recreation sites impacted by noise (Sites 1,3,4,5,6,10,12), this section provides a good estimate of the level of noise caused by helicopter landing tour traffic and the effect to recreation visitors using the trails and sites described in the introduction to this section. The Percent of Persons Highly Annoyed (Graph 4-1) taken from the noise study, will be considered to be the percent of visitors who have had the solitude and quiet of their recreation experience impacted by the noise from helicopter landing tours.

There would be no health or safety effect from the helicopter tours and recreationists would be very annoyed to tolerant of the helicopter flights. The level of annoyance would be higher in areas of more solitude and lower in high use areas such as the Mendenhall Glacier Visitor Center.

For this issue, the following recreation trails and places are identified as possible areas where helicopter landing tour flights may effect the

recreation visitor: West Glacier Trail, Trail of the Glacier, East Glacier Trail, Steep Creek Trail, Moraine Ecology Trail, Dredge Lakes Area Trails, Nugget Creek Trail, Heintzleman Ridge Trail, Montana Creek Trail, Auk Nu Trail, Spaulding Meadows Trail, Mendenhall Glacier Recreation Area, Mendenhall Glacier Visitor Center, Skater's Cabin, Steep Creek Area. These trails are on National Forest System lands.

The types of uses conducted on these trails are: bicycle use, hiking, off road vehicle use, viewing scenery, viewing wildlife, hunting and jogging.

It is possible that the helicopter companies would still conduct flight seeing tours during these off days for helicopter landings which could impact recreation visitors.

Alternative A – No Action

With this alternative, special use permits would not be issued to helicopter companies for guided tours landing on Glaciers in the Juneau Icefield. This could result in the helicopter companies conducting flightseeing tours over the Juneau Icefield which would not land and which would not be regulated by a special use permit from the Forest Service.

The Forest Service does not have jurisdiction over the airspace above the Juneau Icefield, these flights would be regulated by FAA and the CBJ. FAA does regulate flight paths and elevations within the Juneau Airport Control Zone; CBJ has the authority to regulate noise limits within the city and borough boundaries. Currently there are no CBJ ordinances that limit noise for aircraft, only disturbing the peace ordinances which have never been applied to helicopters. Flights could occur without permits or involvement from the Forest Service.

The number of flights would likely not be regulated and would probably equal the demand. This demand can be estimated by the current helicopter companies' proposal. Therefore, the number of flights possible under this alternative would likely be equal to Alternative B - Proposed Action.

It is also possible, however, that without landings, interest in helicopter tours would be less than the companies' anticipated demand. This could result in a lower number of flights than the proposed action.

FAA requires a minimum flying height of 300 feet above residential areas, this would be the only consistent elevation limitation on flightseeing tours. Regardless of the number of flights, it is likely that flight paths and elevations would not be regulated on a regular basis, only occasionally to alleviate congestion within the airport control zone as is done for all aircraft within this area.

The effects of noise of helicopters to recreation users, particularly those traveling on East and West Glacier trails, Nugget Trail, Montana Creek Trail and Heintzleman Ridge Trail would likely be equal to or higher than these effects from Alternative B - Proposed Action. This is because the helicopter flightseeing tours would not be regulated at as great an extent with regards to elevations, routes, and destinations, since without the landings, the Forest Service would not be making recommendations through the special use permits.

If landing permits are not authorized, the tours would continue as helicopter flightseeing tours to the Juneau Icefield and would not be limited. Therefore, the frequency of events where helicopters are heard from recreation sites will likely increase over the 1994 level.

Alternative B – Proposed Action

For this alternative, the following recreation trails and places are identified as possible areas where helicopter landing tour flights may effect the recreation visitor: West Glacier Trail, Trail of the Glacier, East Glacier Trail, Steep Creek Trail, Moraine Ecology Trail, Dredge Lakes Area Trails, Nugget Creek Trail, Heintzleman Ridge Trail, Montana Creek Trail, Auk Nu Trail, Spaulding Meadows Trail, Mendenhall Glacier Recreation Area, Mendenhall Glacier Visitor Center, Skater's Cabin, Steep Creek Area. These trails are on National Forest System lands.

The flight paths which most impacts the trails and recreation places mentioned above are those used by Temsco Helicopters which access Mendenhall Glacier. These flight paths also have had the highest number of helicopters on them in the past. This alternative would authorize an increase in the number of helicopters using the Mendenhall Glacier access route from approximately 5,455 helicopter landings per year to approximately 7,273 helicopter landings per year accessing via this flight path (Table 2-1). This would be an increase of 13 landings per day (from 39 landings to 52). The increase in Temsco's Explorer Tour and Coastal's proposed tours which overfly the area of the Spaulding Meadow Trail would be from the 1994 level of approximately 2,016 to approximately 6,090. This would be an increase of 30 landings per day (from 14 landings to 44).

In Alternative B – Proposed Action, the number of helicopters traveling on the flight paths described above would increase by 82 percent or roughly 1¾ times the 1994 use. This means that the number of hours which recreation visitors are highly annoyed would increase by that amount as more use would mean longer flight hours and more trips during the current helicopter flight periods. Therefore, this

alternative would cause the greatest number of recreationists highly annoyed by noise and affect the solitude and quiet of these recreationists the most of the five alternatives.

Alternative C – Authorize Current Level of Helicopter Landings Through 1999

This alternative would authorize helicopter tour landings up to the level approved for 1994.

The trails impacted by the helicopter landings described in this Alternative below would be the same as those described in Alternative B – Proposed Action.

Under this alternative the number of helicopters using the Mendenhall Glacier access route would not exceed the 1994 level of 5,455 helicopter landings per year or 39 landings per day. There would also be no increase in Temsco's Explorer Tour and Coastal's tours which overfly the area of the Spaulding Meadow Trail. In 1994 approximately 2,000 helicopters used this route to access Gilkey Glacier & Backcountry, Herbert Glacier, Lemon Glacier, Norris glacier and Taku Glacier-Hole in the Wall). The effects to recreation users would be equal to the effects on these areas to the 1994 use.

This alternative would have the second lowest noise impact to recreationists of the six alternatives.

Alternative D – Authorize a Mid Level Number of Landings Through 1999

This alternative would limit the proposed increase to the levels requested by the helicopter tour companies for 1997. Landing times would be limited to 9:00 am to 7:00 pm. Helicopter

landing tours would not be permitted one weekend day per week.

The trails impacted by the helicopter landings described in this alternative would be the same as those described in Alternative B – Proposed Action.

In this alternative, for 1997 the number of helicopters traveling on the flight paths, in Gilkey Glacier & Backcountry, Herbert Glacier, Mendenhall Glacier, Lemon Glacier, Norris Glacier, Taku Glacier-Hole in the Wall, zones increase by 64 percent over the 1994 use. This would be an average increase of 63 helicopter flights per day. This means that the number of hours which recreation visitors are highly annoyed would increase by that amount as more use will mean longer flight hours and more trips during the current helicopter flight periods.

This alternative would increase the number of helicopter flights causing more noise and affect the solitude and quiet of these recreationists more than Alternative C – Authorize Current Level of Landings Through 1999 and Alternative F – 1994 Level with Limited Hours and Days, however this effect would be less than the other three alternatives.

This alternative included the added mitigation for recreation visitors of one weekend day a week when no helicopter landing tours would be permitted and limited operating hours during the rest of the week. A recreation visitor could plan a visit during these off times and would then be much less impacted.

Alternative E – Satellite Heliport

Under this alternative, the number of helicopter landings would be the same as Alternative B – Proposed Action except that a satellite heliport would be constructed along Glacier Highway between miles 25 to 28 for flights to Mendenhall Glacier. There would be one flight

from the existing heliport to the satellite heliport in the morning and a return group in the evening. These flights would travel over Lynn Canal.

Because there are presently no helicopter landing tours originating from this vicinity, the Helicopter Sound Study did not take any measurements in this area. Sound measurements at remote trails sites in the Mendenhall Valley would be representative of this area.

The trails and recreation sites affected by helicopter flight paths from heliports in this area would be: Peterson Lake Trail, Herbert Glacier Trail, Amalga Trail, Eagle Beach, Windfall Trail, and Eagle Glacier Cabin. These trails and sites are less used than those described in the proposed alternative, therefore, overall noise impact from helicopter landing tours would be slightly less. The number of helicopters traveling the flight paths would be the same as the proposed action.

This alternative would have the third most negative impact to recreation users of the six alternatives.

Alternative F – 1999 Level with Limited Hours and Days

This alternative would be the same as Alternative C – Authorized Current Level of Landings Through 1999, except that landing tour hours would be limited and no tours would be allowed on one weekend day and summer holidays. This would be an increase of 32 helicopter flights per day.

It is possible that the helicopter companies would still conduct flightseeing tours which could impact recreation visitors.

The trails impacted by the helicopter landings described in this alternative would be the same

as those described in Alternative B – Proposed Action.

This alternative would have the least negative impact of all six alternatives on recreation users feeling of solitude and quiet. The use level is the same as the lowest alternative and so the analysis of noise disturbance from helicopters to recreationists would be the same. The mitigating factors of off hours and one weekend day plus holidays without landing tours would allow hikers and picnickers to plan a day where they could hike and picnic and would not have tours occurring on the flight paths. This makes this alternative the least impacting to recreation users of the six alternatives, providing flightseeing tours are not used to meet demand.

There would be no health or safety effect from the helicopter tours and users would vary from very annoyed to tolerant of the helicopter flights. The level of annoyance would be higher in areas of more solitude and lower in high use areas such as the Mendenhall Glacier Visitor Center.

D. ISSUE 3 – WILDLIFE

Mountain goats are the primary species of concern with regard to noise impact from helicopters. The extent to which mountain goats are disturbed by helicopter activity seems highly variable and depends on several factors (distance between goats and helicopters, position of helicopter in relation to goats - approach from above versus approach from below, passover versus stop, hover and look, etc.). Most of the helicopter activity observed in the Kensington/Jualin area was over a quarter mile from mountain goats. Generally, no reaction was observed at this distance. Results from data collection were inconclusive due to the low number of data observations (poor visibility and weather conditions hindered data collection efforts in 1991). Some of the effects

identified above can be mitigated to some extent by controlling flight altitudes, flight paths, etc. However, The Forest Service has no authority to regulate these factors nor enforce compliance with recommendations.

Alternative A – No Action

Helicopters would no longer be authorized to land on National Forest System lands. Companies could decide to continue tours as flight-seeing tours. If they continue flightseeing operations without landing, the Forest Service would have no jurisdiction and would no longer recommend flight paths on National Forest System lands. The Forest Service would no longer be able to impose mitigation measures to protect sensitive areas such as mountain goat kidding and breeding areas, through distance requirements in the helicopter companies' special use permits. For these reasons, this alternative could have the most impact on wildlife of the six alternatives.

This alternative also has the potential to decrease noise and disturbance impacts to wildlife if tour numbers decreased due to decreased demand because of the lack of landings. If this were to occur—which is not expected—this alternative would have the least impact.

Alternative B – Proposed Action

Increasing the numbers of flights along current flight paths would have less impact than increasing helicopter use at areas with low current helicopter impact such as Gilkey, Herbert, Lemon, and Taku/Hole-in-the-Wall Glaciers, and the Backcountry, or no helicopter use such as Eagle and Twin Glaciers, and Death Valley. The two high use areas are Mendenhall and Norris Glaciers. Under this alternative, use on the Mendenhall Glacier increases 33 percent over the next five years. Norris Glacier use increases 108 percent. The Forest Service has

observed mountain goats in high helicopter use zones. Mountain goats appear to have adapted to the regular, somewhat consistent helicopter activity typical of Icefield tours as long as the activity is consistent with mitigations recommended in Chapter 2, Mitigation (minimum 1,000 feet vertical and horizontal clearance and/or avoidance of wildlife, etc., see Mitigation Chapter 2).

Wildlife in low-helicopter-use or no-use zones have not previously been exposed to high levels of helicopter tour activity. Activity would increase 150 percent on Gilkey Glacier and in the Backcountry, 187 percent on Herbert Glacier, 100 percent on Lemon Glacier, and 105 percent on Taku, Hole-in-the-Wall Glaciers. The change in numbers is particularly dramatic for Gilkey Glacier and the Backcountry which are currently classified as low-helicopter-use zones.

Wildlife may discontinue or shift to different times their use of preferred habitat due to increased levels of helicopter activity. Although biologists have observed that some groups of mountain goats, for example, show little response to the regular, somewhat consistent helicopter activity associated with icefield tours (USDA Forest Service, 1994c), there is sparse information available indicating distribution and abundance of mountain goats prior to the beginning of the icefield tours. No information exists documenting abundance and distribution of other wildlife species prior to icefield tours, or for effects as a result of icefield tours. Possible effects could range from none to displacement into different habitat.

Alternative C – Authorize Current Level of Landings Through 1999

Effects on wildlife would not change from the current situation. Local mountain goat population shows evidence of habituation to helicopter tour activities (USDA Forest Service

1994c). Because of this habituation, maintaining tour operations at the current levels would have no apparent effects on wildlife.

Alternative D – Authorize Mid Level Number of Landings Through 1999

The helicopter use levels described in this alternative are approximately 50 percent less than the figures described in Alternative B – Proposed Action (which describes the highest helicopter use). The no use areas, Eagle Glacier and Death Valley, identified in the 1987 Environmental Assessment would not experience increases. Helicopter landings would be restricted to the time between 9:00 am and 7:00 pm.

This alternative would result in some level of change in wildlife behavior and habitat use patterns in areas associated with Gilkey Glacier and the Backcountry, Herbert Glacier, Lemon Glacier, Taku and Hole-in-the-Wall Glaciers (low use areas described in 1987 EA). The change would be less than Alternative B – Proposed Action, but would be more than no additional landings, as described in Alternative C – Authorize Current Level of Landings Through 1999. Time restrictions would concentrate helicopter activity and provide for daylight periods during the spring, summer, and fall months when no activity would occur. For wildlife species that are primarily crepuscular (most active in early morning and late evening periods), this would provide a window of time when grazing, hunting, roaming, etc. activity would not be disrupted or disturbed by helicopter activity.

Alternative E – Satellite Heliport

In addition to the effects to wildlife described for Alternative B – Proposed Action, this alternative would impact a watershed (Eagle and Herbert Rivers) that currently experiences low to medium levels of helicopter use. The Eagle and Herbert River Corridor is noted for its habitat diversity and species richness. Brown bear, wolves, many species of songbirds, raptors, waterfowl, marten, river otter, and wolverine are some of the species recorded in this area. Mountain goats, brown bears, and wolves are also found at higher elevations in areas adjacent to Eagle and Herbert Glaciers and the icefield. Many of these species are sensitive to helicopter activity. This river corridor would become the primary access point for most helicopter tours resulting in extremely concentrated, heavy helicopter traffic. This dramatic increase in activity would have the most potential to cause negative impacts to wildlife. The increase in helicopter activity could cause negative impact to wildlife. With mitigation, these impacts probably would not be measurable.

Alternative F – 1999 Level with Limited Hours and Days

This alternative includes elements of Alternative C – Authorize Current Level of Landings Through 1999 and Alternative D – Authorize a Mid Level Number of Landings Through 1999 that combine to make it the most "wildlife friendly" alternative. Maintaining 1994 helicopter activity levels would cause no additional impacts to wildlife. In addition, some effects might be further mitigated by decreasing the number of hours in a given day when helicopters could operate. As described in Alternative D – Authorize Mid Level Number of Landings Through 1999, some wildlife species (particularly those active in early morning and late evening hours) could benefit

from this type of schedule.

E. EFFECTS ON THE JUNEAU ICEFIELD

Forest Service staff have observed the landing sites each year for the past five years and have not noticed any major change in the conditions at the landing sites caused by helicopter landings. The only change noticed was at the Mendenhall Glacier, Suicide Falls site where the shelter which Temsco keeps there slowed down the summer melt of the ice under it. This resulted in a raised ice rectangle after several weeks. This change was eliminated when Temsco began to move the shelter frequently. Continued use would have little or no effect on the ice at the helicopter landing locations for any of the alternatives. The effects would vary by alternative but would be negligible.

F. CUMULATIVE EFFECTS

For the proposed Kensington Gold Project, the Kensington Venture plans to ferry crews to the project site from the Juneau airport via helicopters (USDA Forest Service, 1992b). A camp would be maintained at the project site with shift changes staggered. One helicopter (S-58T) with a 15-20 passenger capacity would be used for crew transport. Flight frequency would average two to four flights per day, five days per week during operations. Flights would not be scheduled for weekends. Helicopters would leave the airport and proceed up Montana Creek, then towards the mouth of Cowee Creek, across Berners Bay and then proceed along the coastline of Lynn Canal to the Project site. Variations from this flight path could occur during extreme weather conditions. The helicopters would quickly climb to a minimum altitude of 300 feet. They would maintain this altitude over all residential areas. Weather permitting, the helicopters would fly at an

elevation of 2,000 feet, well above the 300 foot minimum.

The Kensington Gold Project Final Environmental Impact Statement analyzed these additional flights to and from the Juneau airport and determined that noise caused by these additional aircraft flights would not have a significant effect on wildlife, recreationists or residents because any incremental increase would be small compared to the existing traffic volumes.

The Forest Service has received a request for heli-hiking tours in the alpine area of the Juneau forelands between Mendenhall Valley and Berners Bay. A separate NEPA document will analyze the effects of authorizing this request. At that time the environmental effects from helicopter glacier landing tours will be considered. If heli-hiking tours are authorized, it is likely that more helicopters will be traveling in the vicinity of Mendenhall Valley residential areas and recreation trails and places along the Juneau road system.

The projections for tourism in Juneau show that visitor arrivals grew approximately 3.4 percent annually between 1985 and 1990. It is likely that this growth will continue. If this is projected out to 1999, visitor arrivals would reach 1.1 million that year. This increase would cause an equal increase in the demand for helicopter landing tours. It is likely that helicopter and fixed wing flight seeing tours

which do not land will increase causing increased noise over residential areas and recreation trails and places along the Juneau road system. This increase would particularly be noticed on the Montana Creek approach to the Juneau Airport which is the main route for aircraft traveling to and from Skagway and Haines.

G. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

An irreversible commitment of resources is defined as the loss of future options. It applies primarily to non-renewable resources, such as minerals or cultural resources, and to those factors which are renewable only over long time spans, such as soil productivity.

Irretrievable commitments represent the loss of production, harvest or use of renewable resources. These opportunities are foregone for the period of the proposed action, during which other resource utilization cannot be realized. These decisions are reversible but the utilization opportunities foregone are irretrievable.

With authorization of special use permits for helicopter glacier tours, there would be not be a foreseeable or predicted irreversible or irretrievable commitment of resources.

[End of chapter]

CHAPTER 5 – LIST OF PREPARERS

The following are individuals on the Forest Service interdisciplinary team who were responsible for the preparation of this environmental impact statement.

- John Favro - Team Leader. B.S. in Philosophy and Psychology from California State University, Fresno; undergraduate course work in Natural Resource Management to meet USDA Forest Service Professional Forester Requirements from California Polytechnical University in San Luis Obispo, California; 22 years experience with the Forest Service in recreation management, timber management, and fire management.
- Roger Birk - B.S. in Natural Resource Management from Lincoln University, Missouri. 17 years experience with the Forest Service and Bureau of Land Management.
- Judi Falk - B.S. in Biology from Central Michigan University. M.S. in Wildlife Management from Virginia Polytechnical Institute and State University. 12 years experience with the Forest Service and National Park Service.

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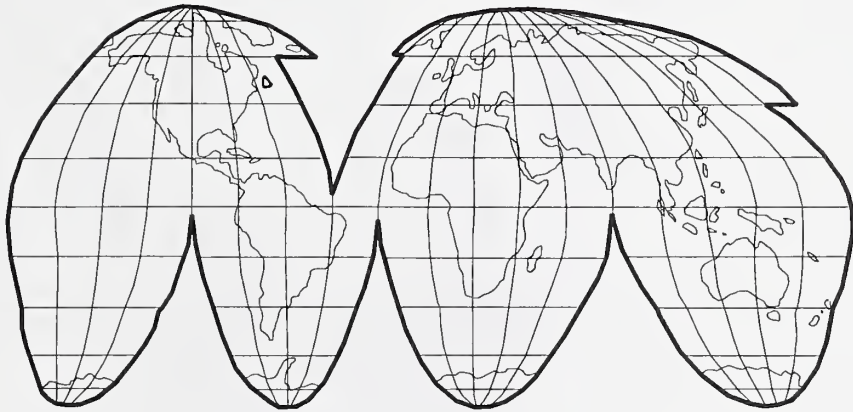
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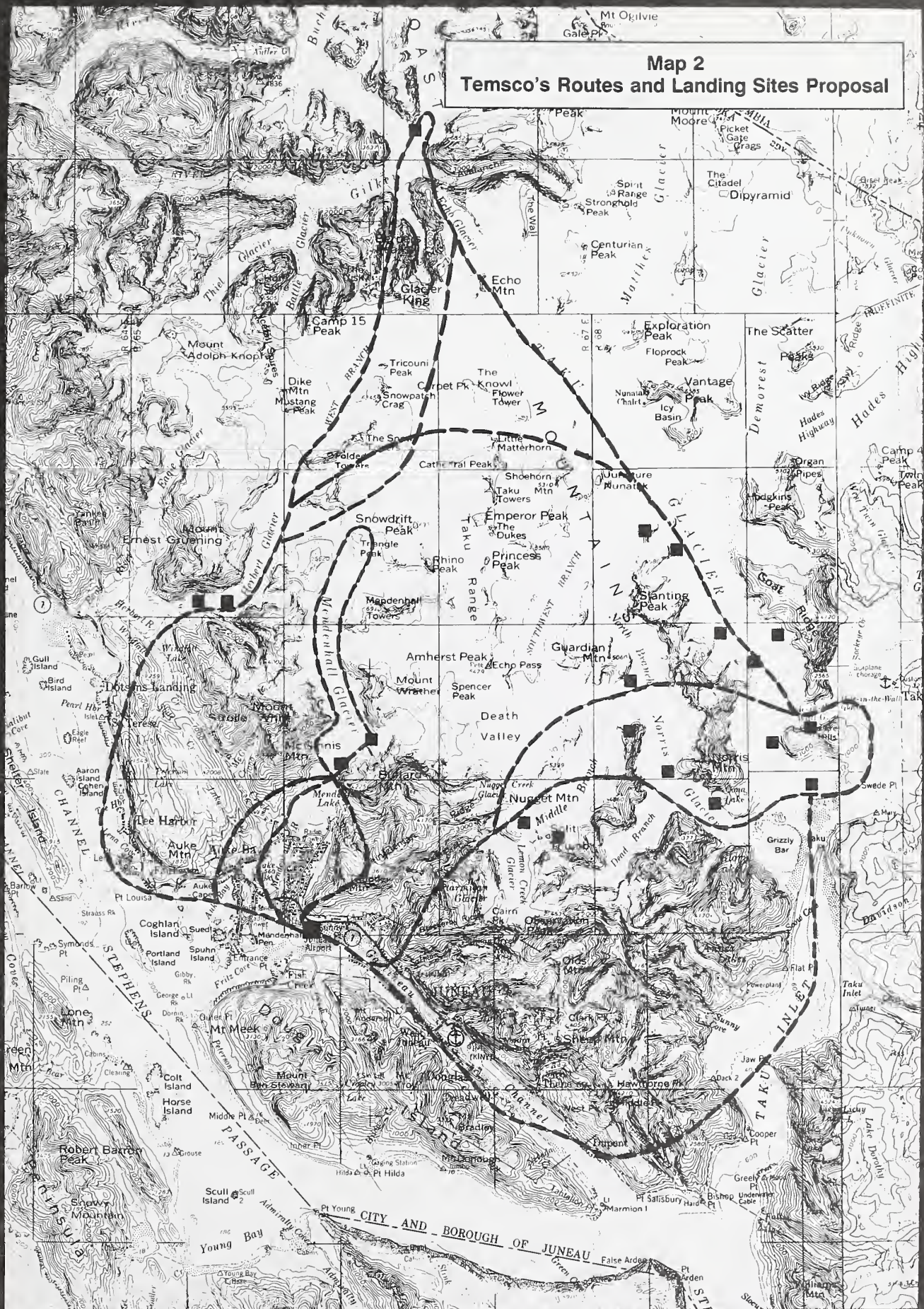
MAPS



Map 1
Juneau Icefield Management Zones

Juneau Icefield Management Zones	
Zone Number	Zone Name
1	Glikey Glacier and Backcountry
2	Eagle Glacier
3	Herbert Glacier
4	Mendenhall Glacier
5	Lemon Glacier
6	Death Valley
7	Norris Glacier
8	Taku Glacier, Hole-in-the-Wall Glacier
9	Twin Glacier
10	Flight Path Zones

Map 2
Temsco's Routes and Landing Sites Proposal

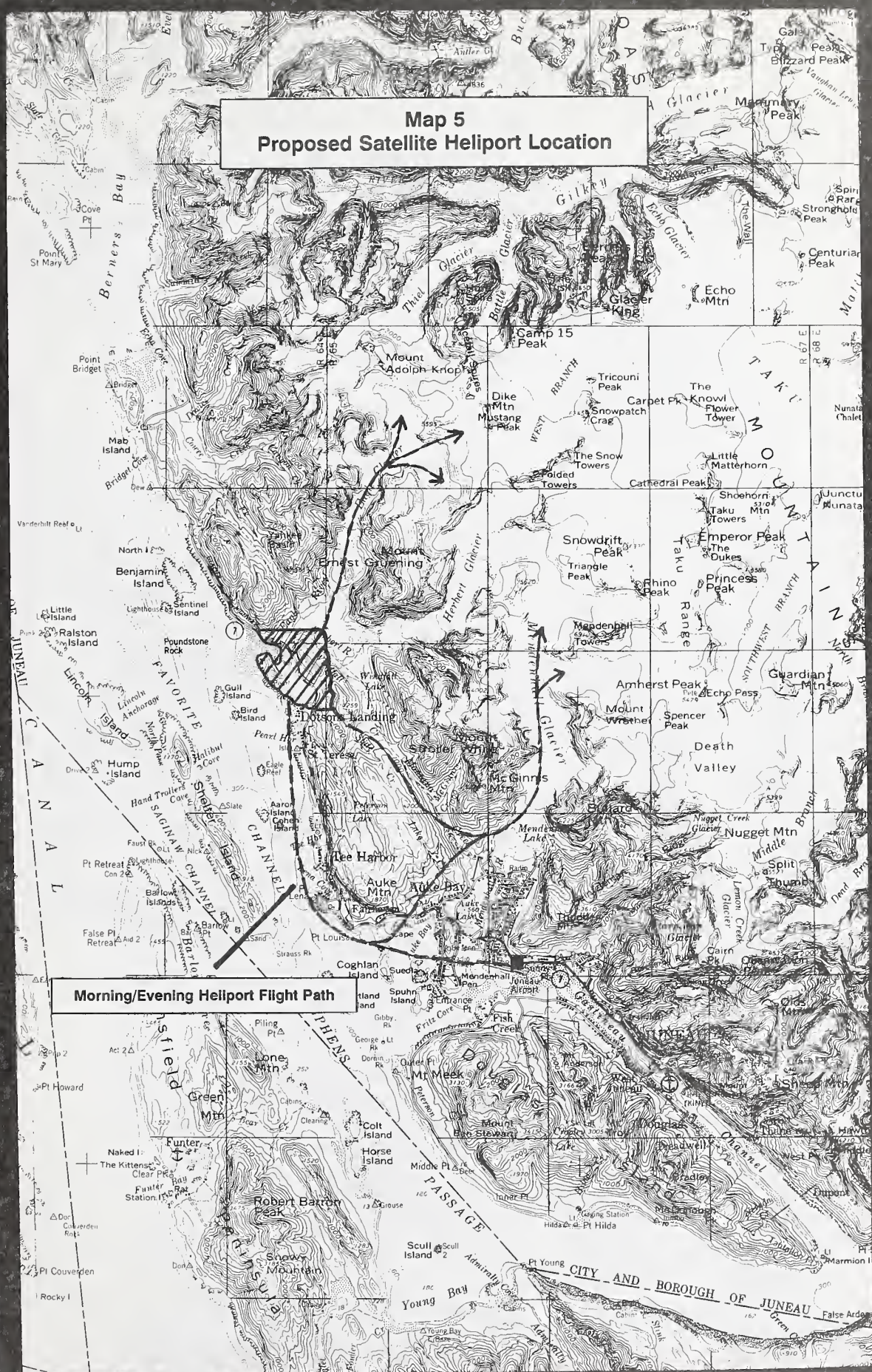


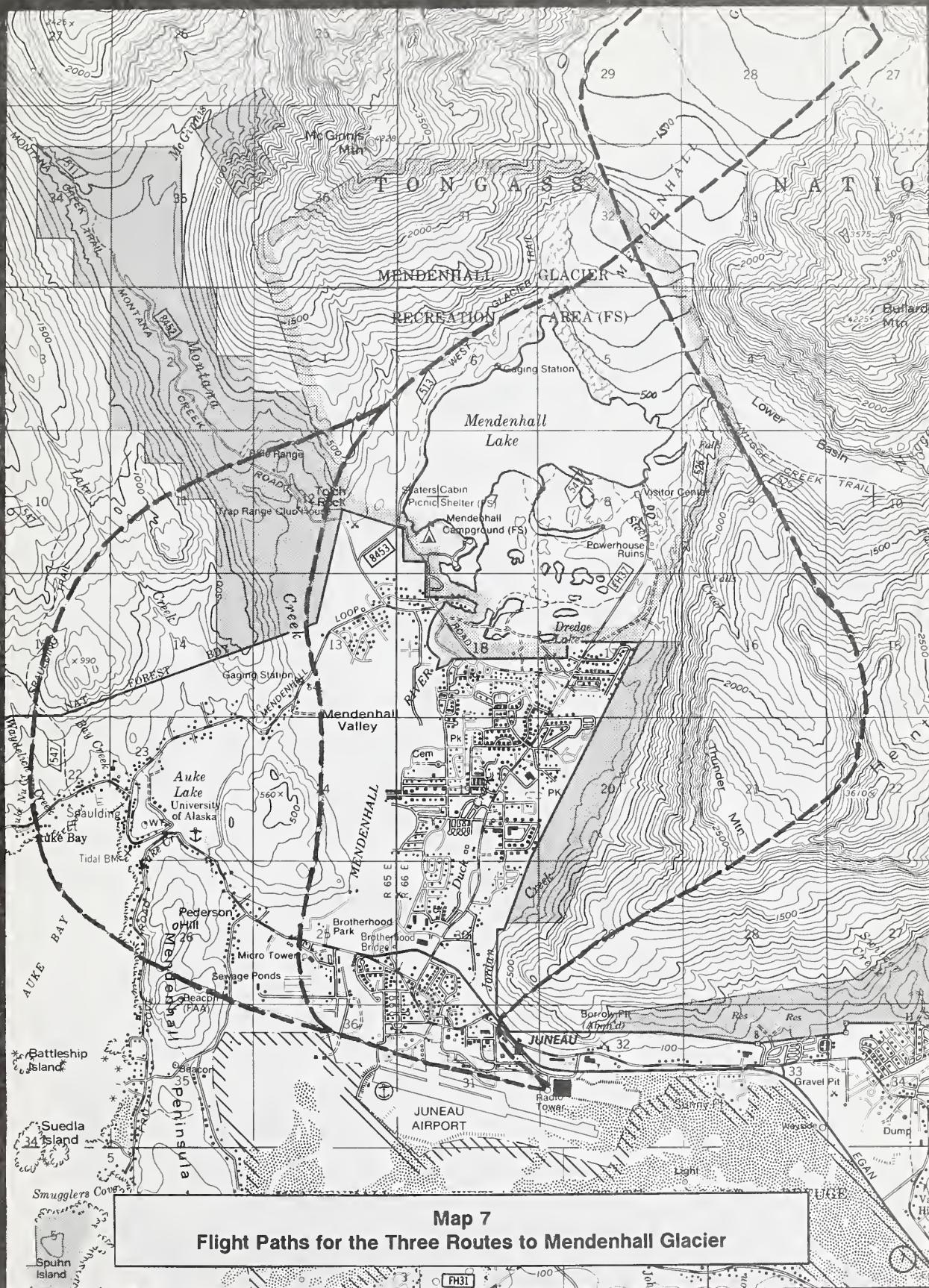
Map 3 Coastal's Routes and Landing Sites Proposal



Map 4 ERA's Routes and Landing Sites Proposal

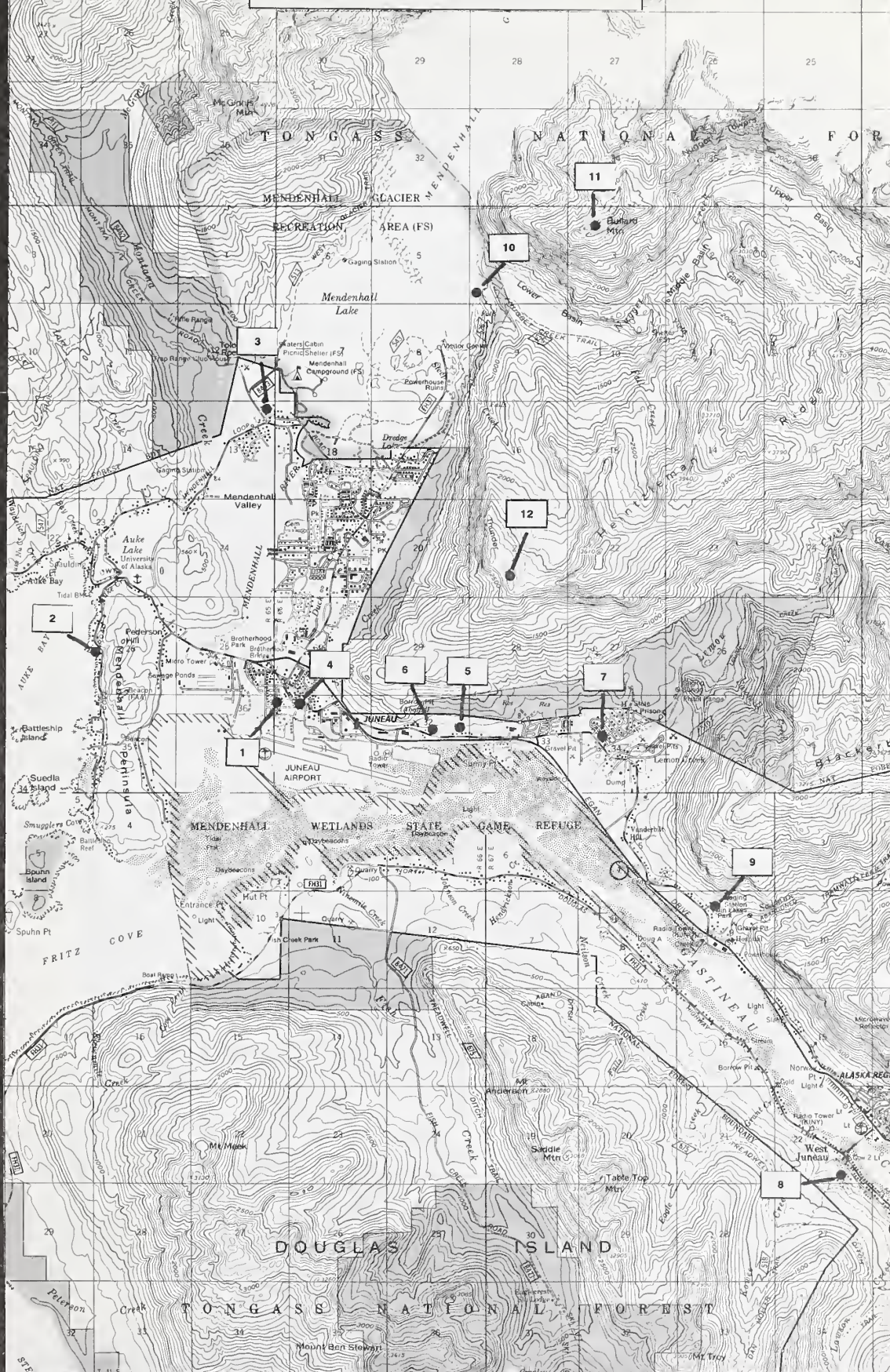
Map 5
Proposed Satellite Heliport Location



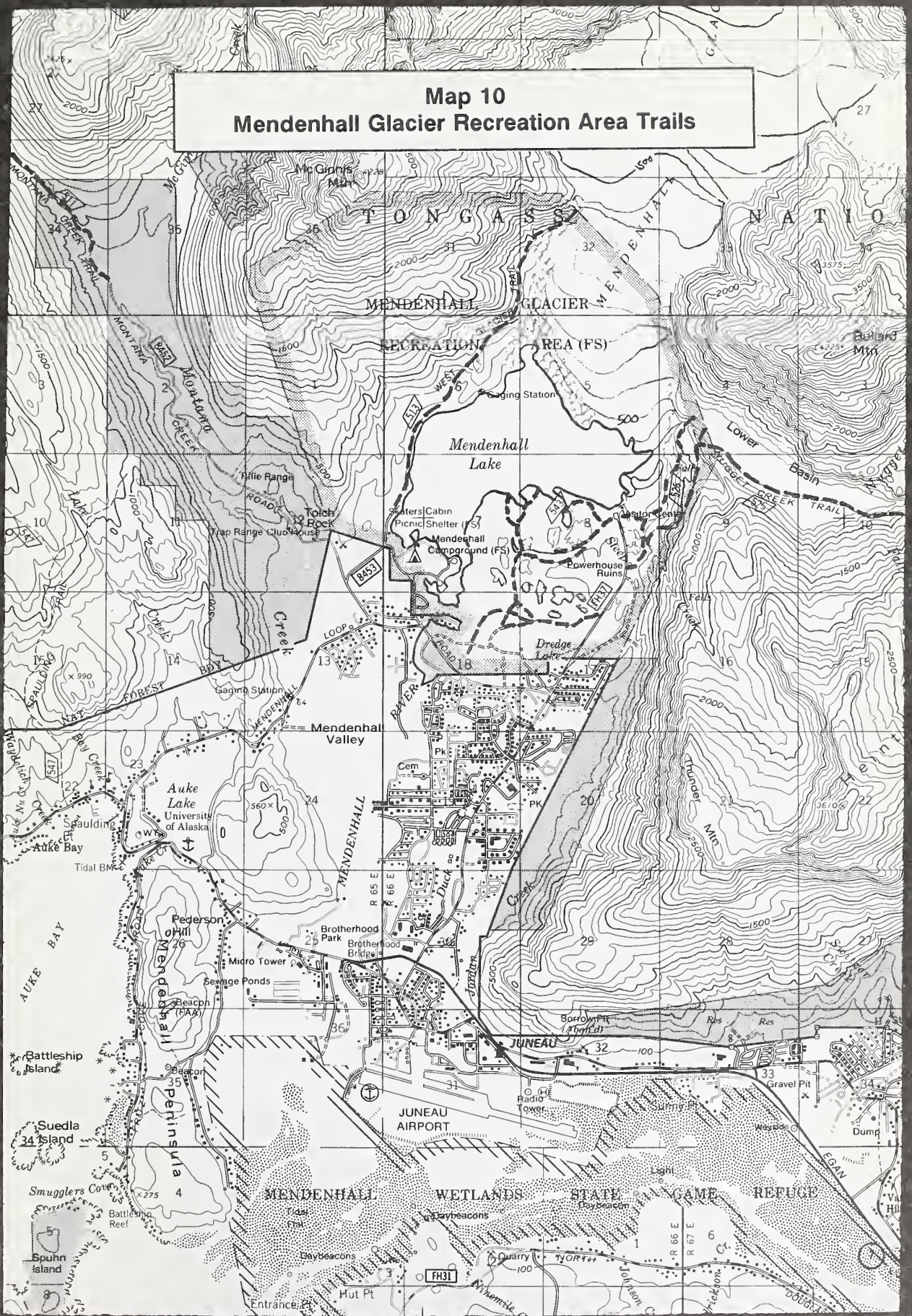




Map 9
Noise Study Measurement Sites



Map 10
Mendenhall Glacier Recreation Area Trails



APPENDICES

LIST OF AGENCIES, ORGANIZATIONS AND PERSONS CONTACTED DURING SCOPING

INDIVIDUALS	
NAME	CITY
Armstrong, Robert	Juneau, AK
Baker, Bruce	Auke Bay, AK
Barton, Michael	Douglas, AK
Bethers, Mike	Auke Bay, AK
Branson, Marie	Juneau, AK
Brown, Karen	Juneau, AK
Clough, Albert	Douglas, AK
Cokeley, Debera	Juneau, AK
Cooper, Judy	Juneau, AK
Duoidp, Ruth	Juneau, AK
Elliot, Mr. and Mrs. Bob	Juneau, AK
Espera, Ray	Juneau, AK
Frarir, George	Juneau, AK
Gillespie, Bill	Juneau, AK
Gillespie, Martha	Juneau, AK
Hill, Ammon	Juneau, AK
Johnson, Bob	Juneau, AK
Kelly, Mr. and Mrs. Charles ...	Juneau, AK
Kent, Chris	Juneau, AK
Kimball, Art	Juneau, AK
Lindh, Craig	Juneau, AK
Martin, Ginger	Juneau, AK
Merrell, Ted	Juneau, AK
Morris, Bill	Juneau, AK
Neal, James	Juneau, AK

INDIVIDUALS	
NAME	CITY
O Brien, John Sr.	Juneau, AK
O Brien, Marilyn	Juneau, AK
Owen, Patrick	Juneau, AK
Pickett, Mr. and Mrs. George ..	Juneau, AK
Rohrbacher-Carls, Rebecca ...	Juneau, AK
Sheridan,	Juneau, AK
Skrien, Sandra	Hoonah
Smith, Julia	Juneau, AK
Smith, Kenneth	Auke Bay, AK
Stoltzfus, Mr. and Mrs. Clyde ..	Juneau, AK
Sunberg, Cindy	Juneau, AK
Sunberg, Jim	Juneau, AK
Trivett, Sam	Juneau, AK
Verrelli, Chip	Juneau, AK
Weltzin, Jack	Auke Bay, AK
Whitman, Mark	Juneau, AK
Wilde, Mike	Juneau, AK
Zimmerman, Sue	Juneau, AK

AGENCIES and ORGANIZATIONS		
AGENCY	NAME	CITY,STATE
Alaska Bound	Patty Chrichton	Pleasant Ridge, MI
Alaska Department of Environmental Conservation	Dick Stokes	Juneau, AK
	Lorraine Marshall	Juneau, AK
Alaska Department of Fish and Game	Richard Reed	Juneau, AK
	John Palmes	Juneau, AK

AGENCIES and ORGANIZATIONS		
AGENCY	NAME	CITY, STATE
Alaska Department of Natural Resources	Bill Garry Area Superintendent State Parks	Juneau, AK
	State Parks Advisory Board	Juneau, AK
	Andy Pekovich	Juneau, AK
Alaska Division of Governmental Coordination	Carrie Skrzynske Project Review Coordinator	Juneau, AK
	Susan Vitera	Juneau, AK
Alaska Rainforest Treks	Karla Hart	Juneau, AK
Alaska Sightseeing Cruise West	Tim Jacox	Seattle, WA
Alaska Sightseeing Tours	Dwight Hutchinson	Seattle, WA
Alaska Up Close	Judy Schuler	Juneau, AK
Alaskans for Juneau		Juneau, AK
Alliance for Juneau's Future	Elizibeth Miller	Juneau, AK
City and Borough of Juneau	Paul Bowers Airport Manager	Juneau, AK
	Christi Herren Community Development	Juneau, AK
	George Imbsen Noise Abatement Committee	Juneau, AK
	Therse Smith Parks & Recreation	Juneau, AK
	Parks & Recreation Advisory Committee	Juneau, AK
	Murray Walsh City Manager	Juneau, AK
Coastal Helicopters	Jim Wilson	Juneau, AK
Eagle Express Line	JoAnne Robitaille	Juneau, AK
ERA Helicopters	Bill Zeeman	Juneau, AK
Friends of Berners Bay	Skip Gray	Juneau, AK
Holland America - Westours	Frank Pival	Juneau, AK
Juneau Audubon Society		Juneau, AK
Juneau Convention and Visitors Bureau		Juneau, AK

AGENCIES and ORGANIZATIONS		
AGENCY	NAME	CITY,STATE
Juneau Empire	James McPherson	Juneau, AK
KINY/KSUP		Juneau, AK
KTOO Radio and Television	Shari Kochman	Juneau, AK
KTOO Television		Juneau, AK
Lynn Canal Conservation Society		Haines, AK
Mendenhall Glacier Tours	Donna Rich	Juneau, AK
National Marine Fisheries	Duane Peterson	Juneau, AK
Princess Tours	Timothy McDonnell	Seattle, WA
Ptarmigan Ptransport Ptours	Martin Perkins	Juneau, AK
Royal Cruise Line	Bruce Good	San Francisco, CA
Shore Excursions	David Sweet	Coral Gables, FL
Sierra Club Legal Defense Fund		Juneau, AK
Southeast Alaska Conservation Council		Juneau, AK
Taku Conservation Society	James and Mary Lou King	Juneau, AK
Temsco Helicopters	Bob Engelbrecht	Juneau, AK
U.S. Fish and Wildlife Service	Mike Jacobson	Juneau, AK
	Bill Schemp	Juneau, AK
	Nevin Holmberg	Juneau, AK
U.S.D.A. Forest Service	Chatham Area Forest Supervisor Staff	Sitka, AK
	Alaska Region Regional Office Staff	Juneau, AK
	Juneau Ranger District Staff	Juneau, AK
Vally Toastmasters		Juneau, AK
KJUD Television/KSUP Radio		Juneau, AK

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